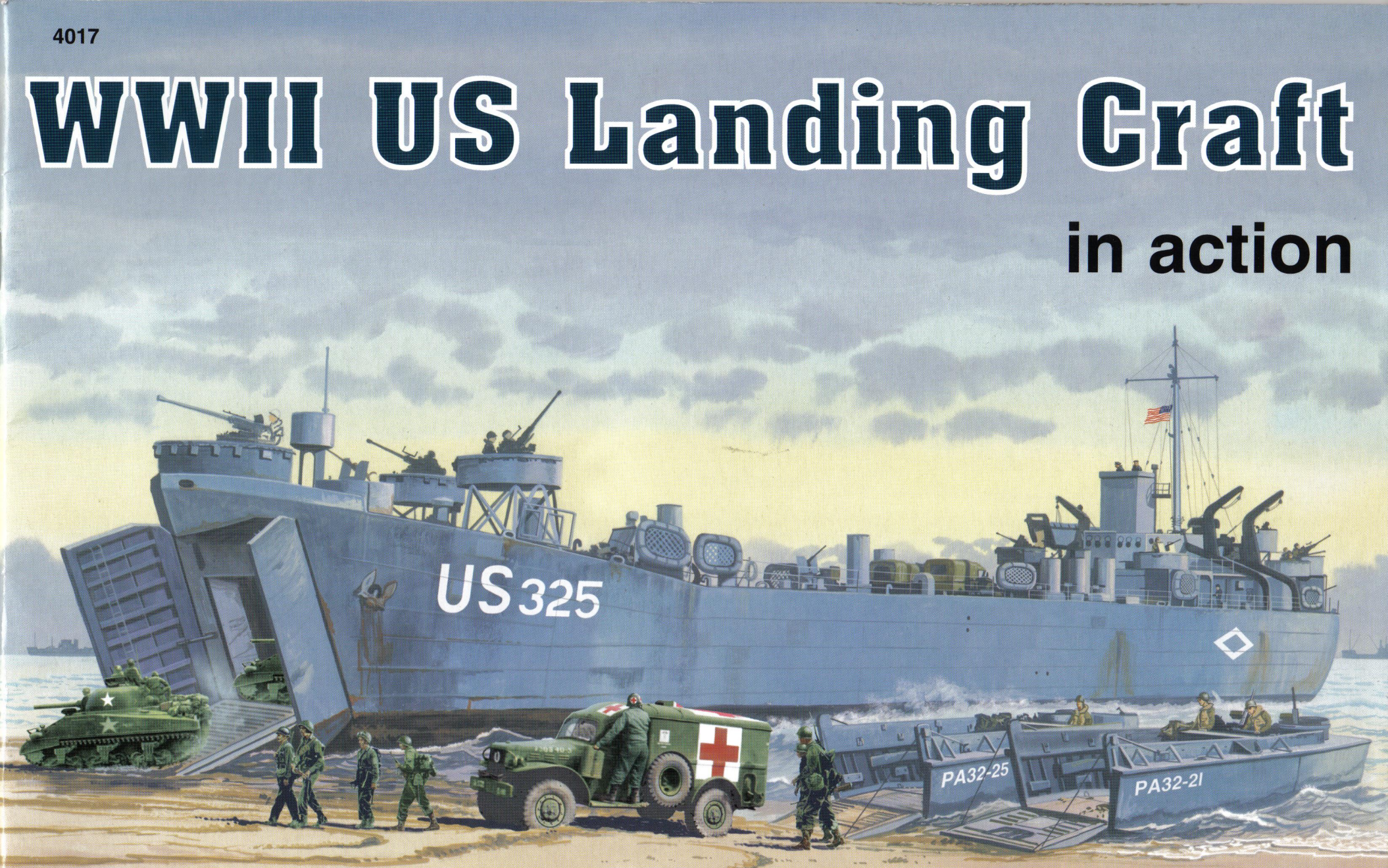
4017

WWII US Landing Craft

in action



Don Greer

Warships Number 17

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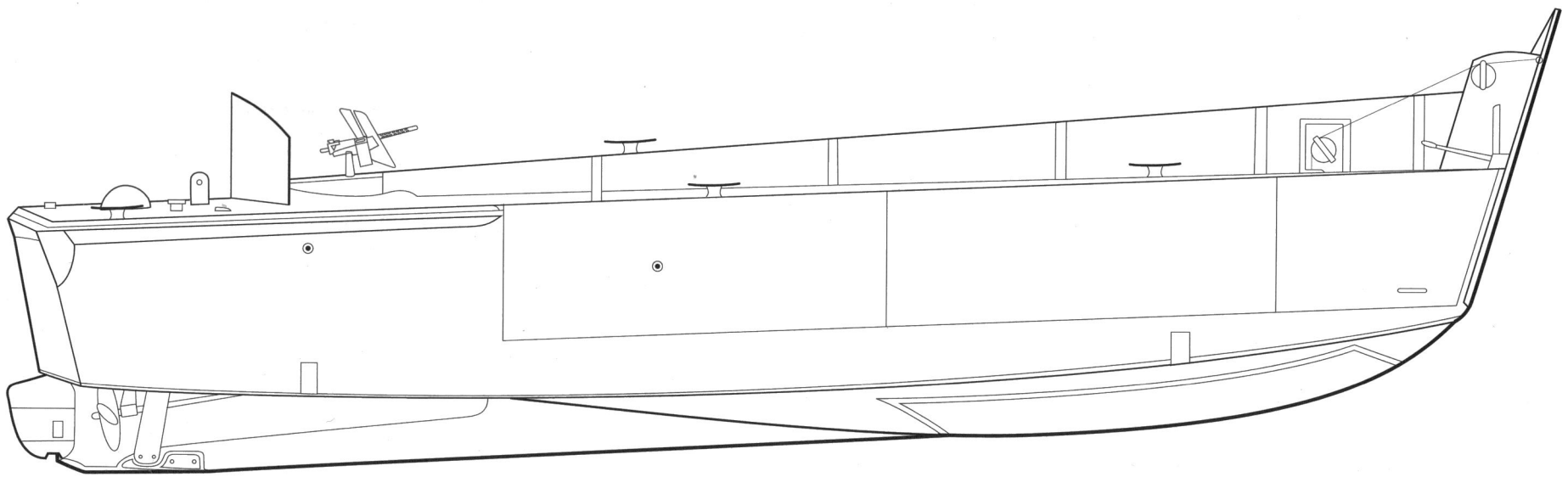
WWII US Landing Craft

in action

By Al Adcock

Color by Don Greer

Illustrated by Darren Glenn and Dave Gebhardt



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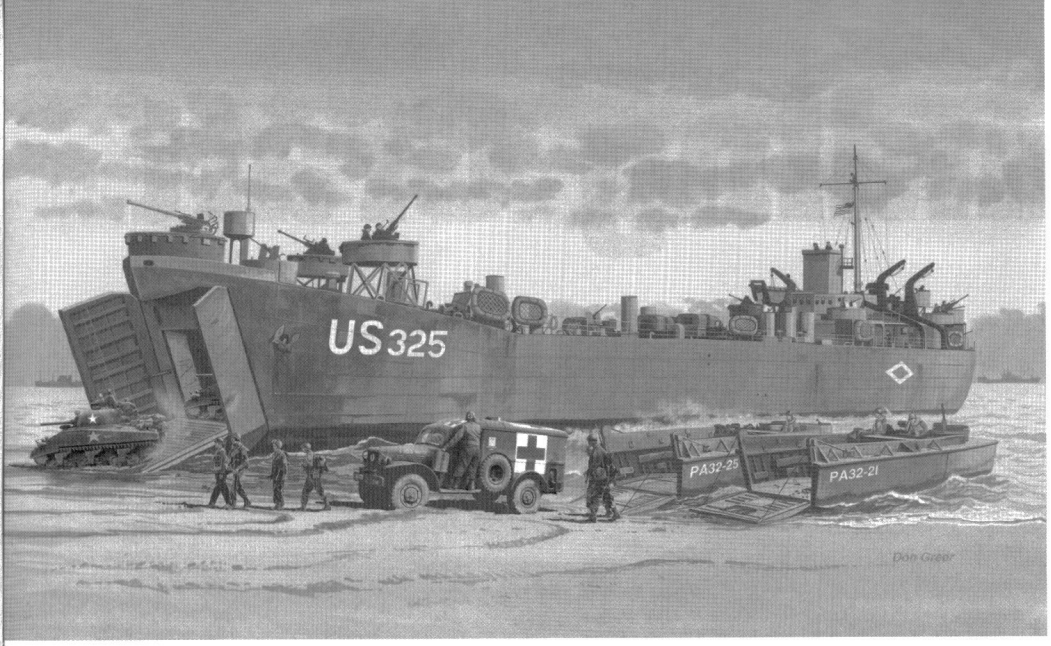

An M4 Sherman tank moves out of the Landing Ship, Tank (LST)-325 on the beach in Normandy, France on 6 June 1944. Two Landing Craft, Vehicle Personnel (LCVPs) (PA32-25 and PA32-21) are beached to port of the LST. Both LCVPs were assigned to the attack transport USS CALVERT (APA-32). An ambulance delivered by one of the LCVPs is driving onto the beach. These landing craft were joined by hundreds of vessels in Operation OVERLORD, the Allied invasion of Northern France.

Acknowledgements

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Dedication:

To Wm. R. Bailey

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An M4 Sherman tank drives out of the bow doors of LST-202 at Cape Gloucester, New Britain on 24 December 1943. The tank provided armored fire support for US Marines that assaulted the Japanese-held island east of New Guinea. Another Landing Ship, Tank (LST) is beached in the distance. US Coast Guard (USCG) personnel manned LST-202 and other US Navy landing craft during World War Two. (Real War Photos)

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Introduction

Amphibious landing forces are charged with landing enough assault forces and supplies to maintain and reinforce a beachhead on enemy shores. This beachhead would be held until sufficient ground troops can land and carry the fight to the enemy and defeat him on his own soil.

The first recorded amphibious landing on enemy soil was carried out by a strong Persian force landing at Marathon, Greece in 490 BC. A much smaller Greek Army eventually defeated the Persian Army and the Persians were forced to withdraw. Julius Caesar of Rome employed amphibious forces when he conquered England in 54 BC. In 1066, Norman ruler William the Conqueror used amphibious forces to cross the English Channel and defeat the English forces at the Battle of Hastings.

During the American Revolution, General George Washington utilized the element of surprise and wooden rowboats to cross the Delaware River on 25 December 1776. His forces attacked British (Hessian) forces at Trenton, New Jersey. Washington's crossing of the Delaware marked the first time American forces had utilized amphibious warfare. In 1847, during the Mexican War, US Marines attacked Veracruz, Mexico from the sea. They secured the beach and defeated the Mexican forces. The US War Between the States (Civil War) produced few amphibious landings, with the exception of the Northern forces attacking the Batteries Tracy and Huger, part of the defenses of Mobile, Alabama in 1864.

The last US amphibious landings during the 19th Century occurred in the Philippines Islands, when American troops attacked Spanish forces during the 1898 Spanish-American War. This would not be the last time American forces would have to attack that island group. World War One saw no amphibious landings since American forces landed on friendly territory during that conflict.

The time between the two great wars saw little development of landing craft until Japan began to attack China in 1937. The Japanese employed cargo ships fitted with bow doors, which enabled their forces to quickly disembark the landing craft. This revolutionary landing craft caught the attention of the US Marines and they requested boat builders to construct some designs for their forces.

A New Orleans boat builder named Andrew Jackson Higgins proposed one of his boats to the Marines. He developed this craft to navigate the swamps and backwaters of the Mississippi River around the state of Louisiana. Higgins' design, called the Eureka, became the **Landing Craft, Personnel (LCP)**. It was accepted by the Marines, but frowned upon by the Navy as too small and not the right size to be accommodated aboard current cargo/transport ships. It seems that the davits on those ships were 34 feet (10.4 M) apart and the LCPs were 36 feet (11 M) long. Responsible heads prevailed and the davits were moved to accommodate the landing craft.

The Higgins Boat Company would eventually produce over 20,000 landing craft of many types, but the majority was of the **Landing Craft, Vehicle Personnel (LCVP)** type. General Dwight D. Eisenhower, Supreme Allied Commander in Europe, called the LCVP the most important war-fighting tool of World War Two and Higgins the man who won the war for us. Eisenhower added that without the 'Higgins Boats,' the war would have surely been lost. Higgins also designed and built the larger **Landing Craft, Mechanized (LCM)**.

Smaller boat builders that manufactured yachts and fishing vessels in peacetime usually constructed US landing craft and ships. When World War Two broke out, they – along with some steel and bridge building companies – were contracted to build the craft necessary to mount amphibious landings. Any manufacturer with access to water was called upon to construct the amphibious craft. When wartime construction began in earnest, there were more landing craft than any other type of vessel in the US Navy.

The smaller landing craft (LCPs, LCVPs, and LSMs) were usually carried to the landing area by either High Speed Attack Transports (APDs, converted destroyers and destroyer escorts), **Landing Ships, Tank (LSTs)**, Transports (APs), or Transports, Attack (APAs). The larger vessels lowered the smaller craft to the water using either davits or cranes. Once in the water, they would be loaded with equipment by cranes or by having the assault troops crawl over the side utilizing cargo nets. The landing craft crew rode the craft from the deck to the water to ensure that their craft was under control once it became waterborne. The landing craft assembled and approached the beach in lines abreast waves. This assured that the beachhead would have ample troops to secure it.

Union forces led by General Canby utilized oar-powered assault boats to attack the Batteries Tracy and Huger in 1864. These batteries were part of the defenses of Mobile, Alabama during the American War Between the States (Civil War 1861-1865). During the American War for Independence (Revolutionary War), General George Washington used oar-powered assault boats to attack the British (Hessian) garrison across the Delaware River in Trenton, New Jersey in 1776. (Elsilrac)

US Navy gunboats bombard San Fabian, the Philippines before landing of troops on the island during the Spanish-American War in 1898. Diesel-powered boats towed the assault boats, which each carried up to 20 US Army troops for the landings. The ship to starboard transported the assault boats to the launching point. The Spanish-American War saw the last US amphibious operations until World War Two. (Elsilrac)

US Marines engage in a Landing Force Drill in 1940. The Marines are disembarking from 26 foot (7.9 M) long diesel-powered motor launches during this drill. This exercise enabled the Marines to practice what they would be doing for real just two years later in the Pacific. The 26 foot boats had a capacity of 25 men, including crew, and displaced 10,900 pounds (4944.2 KG) at full load. (Elsilrac)

Landing craft were usually camouflaged to match the mother ship's paint scheme and not stand out on deck. Most landing craft were camouflaged in either Haze Gray (5-H; approximately FS35237) or Navy Blue (5-N; approximately FS35044) when carried on APs or APAs. The craft were finished in a Tropical Scheme when carried by APDs.

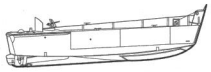
US landing craft were utilized on all fronts of the war against the Axis powers. They enabled the Allies to defeat the Japanese, Germans, and Italians and bring the war to a swifter end. In mid-1945, the largest invasion fleet ever was gathered to attack the Japanese home islands with over one million men to be landed on their shores. The two atomic bombs dropped on Japan effectively cancelled the landings and the sure loss of hundreds of thousands of lives on both sides.

A Higgins Eureka boat demonstrates its bow strength by driving up on the concrete levee that protects New Orleans, Louisiana from Lake Pontchartrain. Andrew Jackson Higgins designed the Eureka Boat for oil exploration companies operating in the swamps and backwaters of Louisiana. Both the British and US navies adopted this design for their amphibious forces as the Landing Craft, Personnel (Large), or LCP (L). (Higgins Industries)

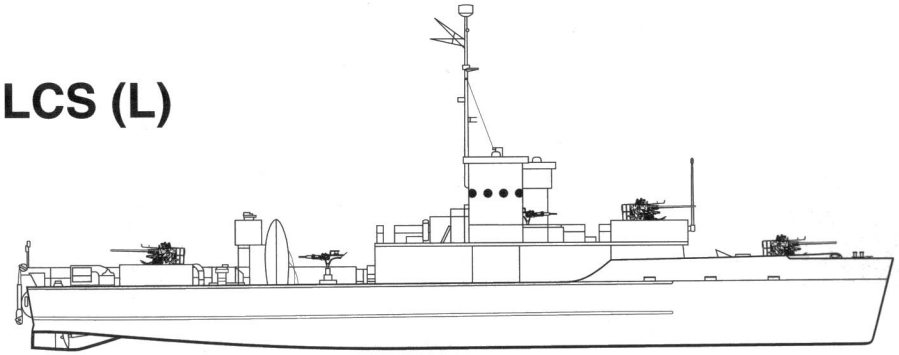
Development

LCP (R)

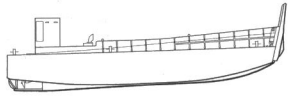
LCVP



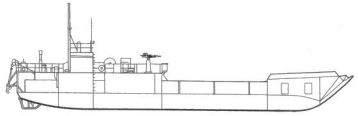
LCS (L)



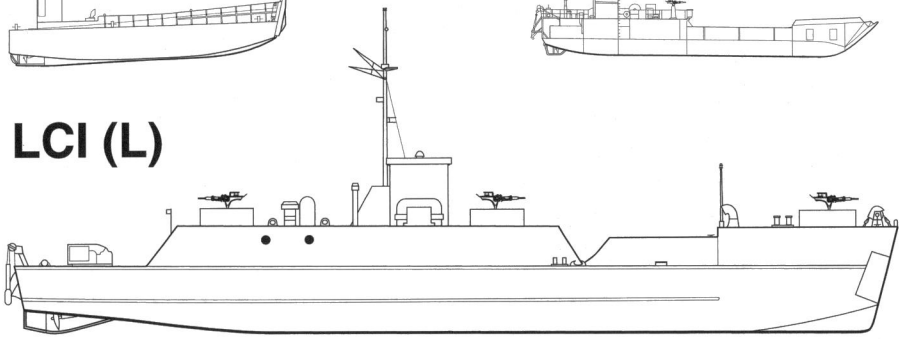
LCM (Mk 3)



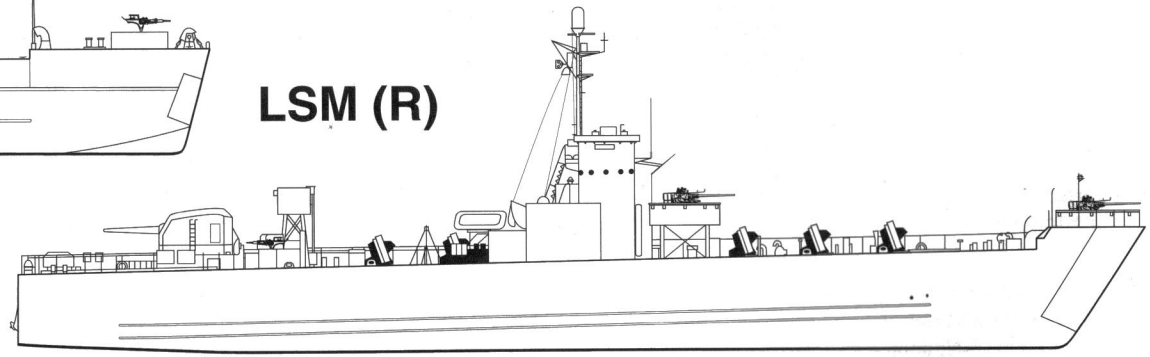
LCT (Mk 6)



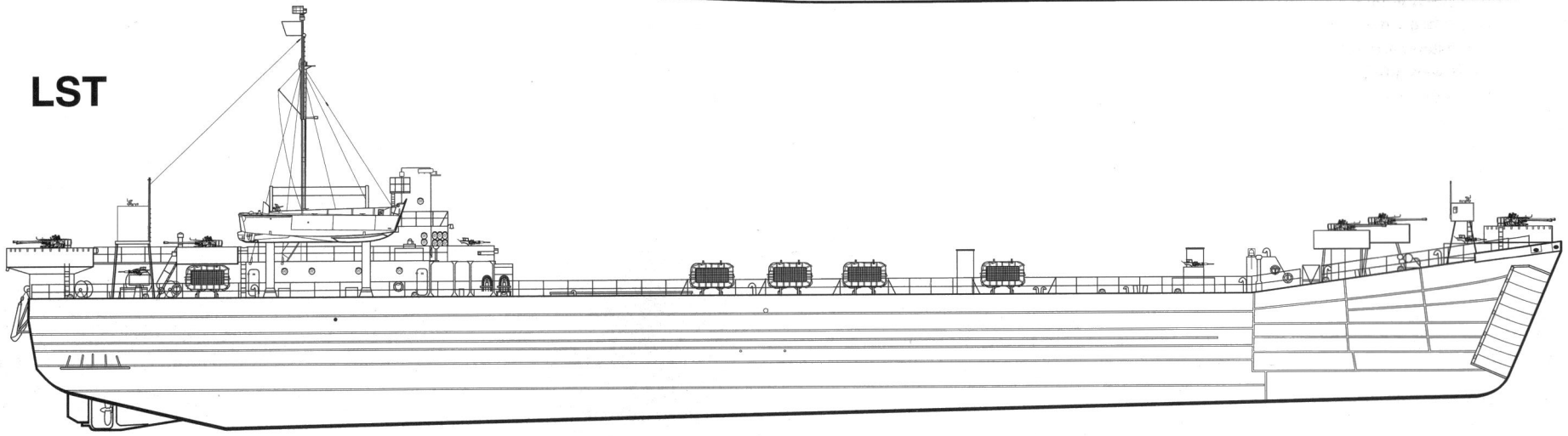
LCI (L)



LSM (R)



LST



Landing Craft, Personnel (Large and Ramp) and Landing Craft, Vehicle

The **Landing Craft, Personnel (Large)** or **LCP (L)** was a development of the Higgins Eureka boat that Andrew Jackson Higgins had developed in the 1930s. He used this craft to navigate the swamps and backwaters of Louisiana to service the developing oil and gas fields. The original Eureka boat had a covered cabin and was built of wood, a commodity readily available in the southern United States. The boat had a shallow 18-inch (45.7 CM) draft and because of the 'headlog' – a solid block of pine at the bow – enabled the boat to move at flank speed over obstacles with little or no damage. The bow design became known as a 'spoonbill' type because of its resemblance to the shallow wading bird.

The production LCP (L) was 36 feet 8 inches (11.2 M) long and 10 feet 10 inches (3.3 M) in beam, with a draft of 2 feet 6 inches (0.8 M) when light and 3 feet 6 inches (1.1 M) when fully loaded. Its light displacement was 13,000 pounds (5896.8 KG), while it displaced 18,000 pounds (8164.8 KG) fully loaded. The LCP (L) carried either 25 fully loaded troops or up to 8100 pounds (3674.2 KG) of cargo. It was powered by a variety of gasoline or diesel power plants with the most common type being the 225 horsepower (HP) Gray Marine 64HN9 six-cylinder diesel engine. The 64HN9-powered LCP (L) had a maximum speed of 8 knots (9.2 MPH/14.8 KMH) and an endurance of 130 miles (209.2 KM) with the onboard 120 gallons (454.2 L) of fuel. The diesel engine was preferred by both the transport ship's captain and by the landing craft's crew. Gasoline had a nasty tendency to explode when it came into contact with anything hot, such as shrapnel and bullets, while diesel fuel had a higher flash point and was less volatile.

The LCP (L) was usually operated by a crew of three men: a coxswain (pilot) and two gunners. The gunners manned single .30 caliber (7.62MM) Browning M1919 machine guns in cockpits situated in the bow, which gave them excellent fields of fire. The LCP (L) was provided with armored cross bulkheads to protect the crew, engine, and fuel tank. The embarked assault troops sat on low benches situated in two compartments on the craft and debarked over the sides of the craft upon landing.

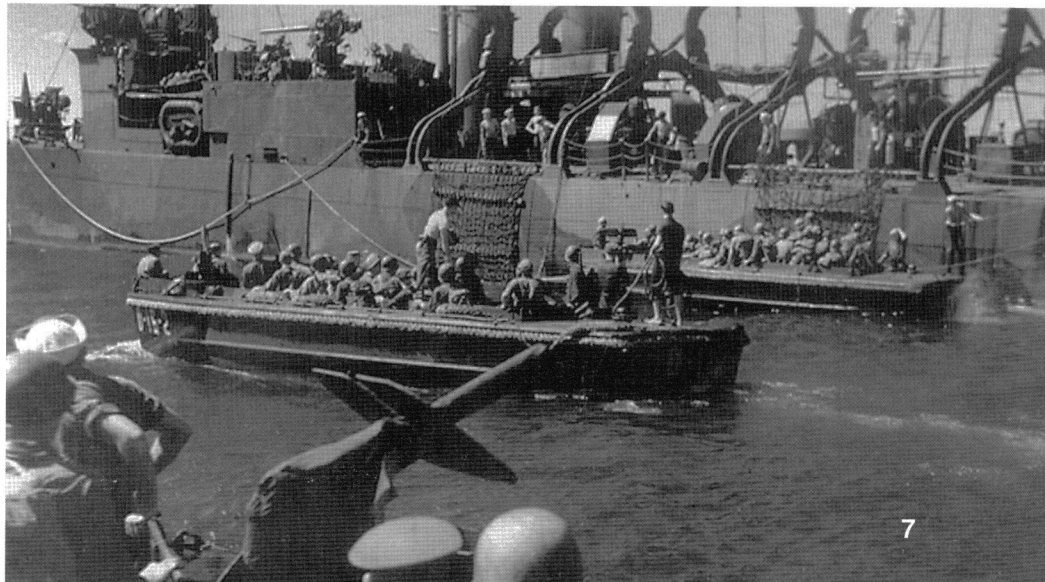
The **Landing Craft, Personnel (Ramp)** or **LCP (R)** was a development of the LCP (L) with a bow-mounted ramp added to decrease debarkation time once the beach was reached. Although outwardly similar to the LCP (L), the improved LCP (R) had an increased capacity to carry 39 fully armed troops or 8595 pounds (3898.7 KG) of cargo. The LCP (R)s could be lowered fully loaded when carried on davits. Ships not equipped with davits lowered empty craft by crane into the water before loading could begin.

The LCP (R) was 35 feet 11.75 inches (10.9 M) in length – 8.25 inches (21 CM) shorter than the LCP (L) – mainly because the bow was bobbed off to accommodate the ramp. Its beam of 10 feet 9.5 inches (3.3 M) was .5 inch (1.3 CM) shorter than for the earlier craft, while the maximum loaded draft remained 3 feet 6 inches. The LCP (R)'s maximum full load displacement was 24,100 pounds (10,931.8 KG), but its hoisting weight was restricted to 16,000 pounds (7257.6 KG). The LCP (R) was constructed entirely of wood with a V-bottom, wood frame, and plywood sides. The double plank bottom consisted of a plywood inner layer and a large pine block outer layer.

Like the LCP (L), the LCP (R) was powered by a variety of gasoline engines, including the 115 HP Chrysler Royal and the 150 HP Palmer engines. Other craft were powered by 105 HP Buda or 225 HP Gray Marine diesel powerplants. The Gray Marine engine was fitted to most

Two Landing Craft, Personnel (Large) or LCP (L)s pass the carrier USS ENTERPRISE (CV-6) before the Guadalcanal-Tulagi landings on 24 July 1942. Douglas SBD Dauntless dive-bombers are secured to ENTERPRISE's flight deck. The landing craft usually circled while they awaited the signal to line up and head in line abreast to the landing beach. (National Archives)

Troops board the high-speed attack transport USS WARD (APD-16) from an LCP (L) before landing at Cape Sansapor, Dutch New Guinea on 30 July 1944. Another LCP (L) cruises alongside WARD. The LCP (L) was armed with two .30 caliber (7.62MM) or .50 caliber (12.7MM) machine guns mounted in two bow area cockpits. Prior to becoming an attack transport, WARD was the destroyer (DD-139) that sank a Japanese mini-submarine in Pearl Harbor early on 7 December 1941. (National Archives)



An LCP (L) from the attack cargo ship USS WAYNE (APA-54) is used as a small cargo carrier in a Pacific area harbor in 1944. Cargo ships used LCP (L)s to ferry supplies between the shore and larger ships in the harbor. The LCP (L) is passing the attack transports USS AQUARIUS (AKA-16) and USS TITANIA (AKA-13) to starboard. (National Archives)

LCP (R)s, but engine availability determined placement in the vessels.

The **Landing Craft, Vehicle (LCV)** was developed from the basic LCP (L and R) design to enable the assault troops to have immediate vehicle support once they landed on the beach. A full width bow ramp was fitted and the coxswain's position was moved to a raised steering position on the aft deck. The location of the engine remained essentially the same as in the earlier craft. The LCV could carry a single one ton (.9 MT) truck, 36 fully armed troops, or 10,000 pounds (4536 KG) of cargo. The LCV was not designed for lowering while fully loaded, but could be hoisted with a maximum of seven litters in calm seas.

The LCV was 36 feet 3 inches (11 M) in overall length, with a beam of 10 feet 10 inches (3.3 M) and a draft of 1 foot 6 inches (0.5 M) forward and 2 feet 6 inches (0.8 M) aft when in the light condition. When fully loaded, the drafts were 2 feet 2 inches (.7 M) forward and 2 feet 10 inches (0.9 M) aft. The LCV's displacement was 14,000 pounds (6350.4 KG) lightly loaded and 22,000 pounds (9979.2 KG) fully loaded. Maximum speed with a full load was nine knots (10.4 MPH/16.7 KMH) and endurance was rated at 63 miles (101.4 KM) at full speed and 120 miles (193.1 KM) at seven knots (8.1 MPH/13 KMH). The 225 HP Gray Marine diesel engine was the most prevalent power plant, although LCVs used other diesel and gasoline engines.

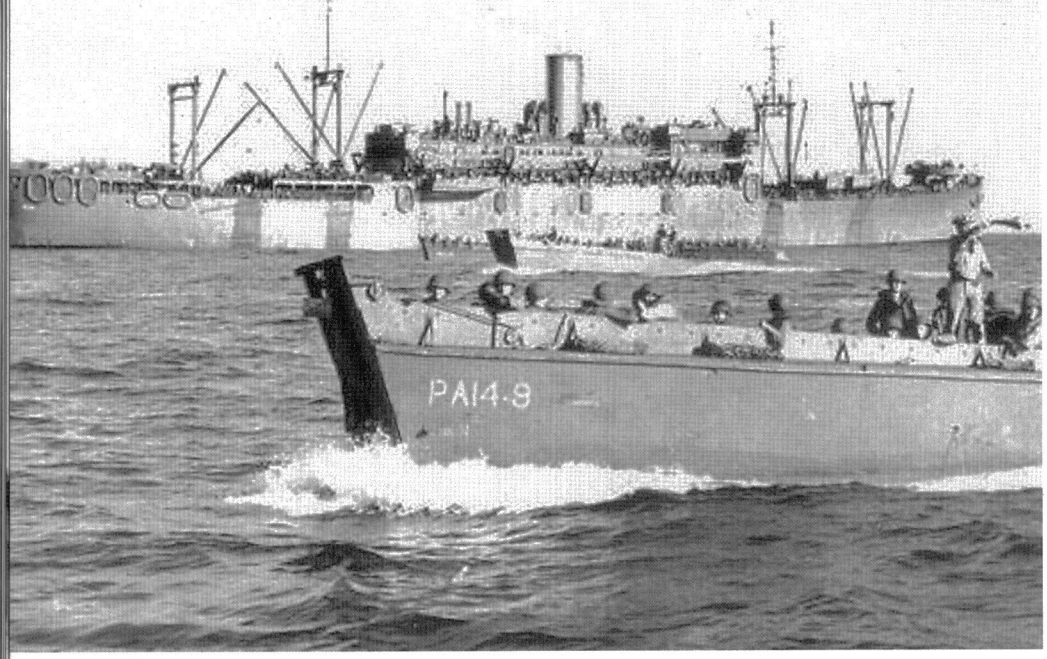
The LCP (L), LCP (R), and the LCV were the most common type of landing craft early in World War Two. They participated in the invasions of North Africa, Guadalcanal, Salerno, Tarawa, and a few landed at Normandy on 6 June 1944. They were all superceded by the improved Landing Craft, Vehicle Personnel (LCVP).

US Army troops hit the surf from a Landing Craft Personnel (Ramp) on the southern French coast during Operation DRAGOON on 15 August 1944. This LCP (R) was boat number 4 from the high-speed attack transport USS BARRY (APD-29). The LCP(R) was 36 feet (11 M) in length and had a full load displacement of 24,100 pounds (10,931.8 KG). Troops are disembarking from other LCP (R)s along the beach. (USCG)

An LCP (R) (PA46-20) assigned to the attack transport USS KNOX (APA-46) was field modified with an added cabin for use as a Landing Craft Control (LCC) vessel. KNOX's landing craft had a white diamond painted on the ramp for identification. The two bow mounted .30 caliber machine gun cockpits were retained for additional protection. (Via Dave Mountain)

An LCP (L) cruises past several Landing Craft, Vehicle Personnel (LCVPs) at the Higgins Boat Operations and Marine Engine Maintenance School on Lake Pontchartrain, Louisiana. Men of the 182nd General Hospital man the boats, which were crewed by US Navy and Coast Guard students. These students were learning how to operate and maintain the Higgins-built landing craft. (Higgins Industries)

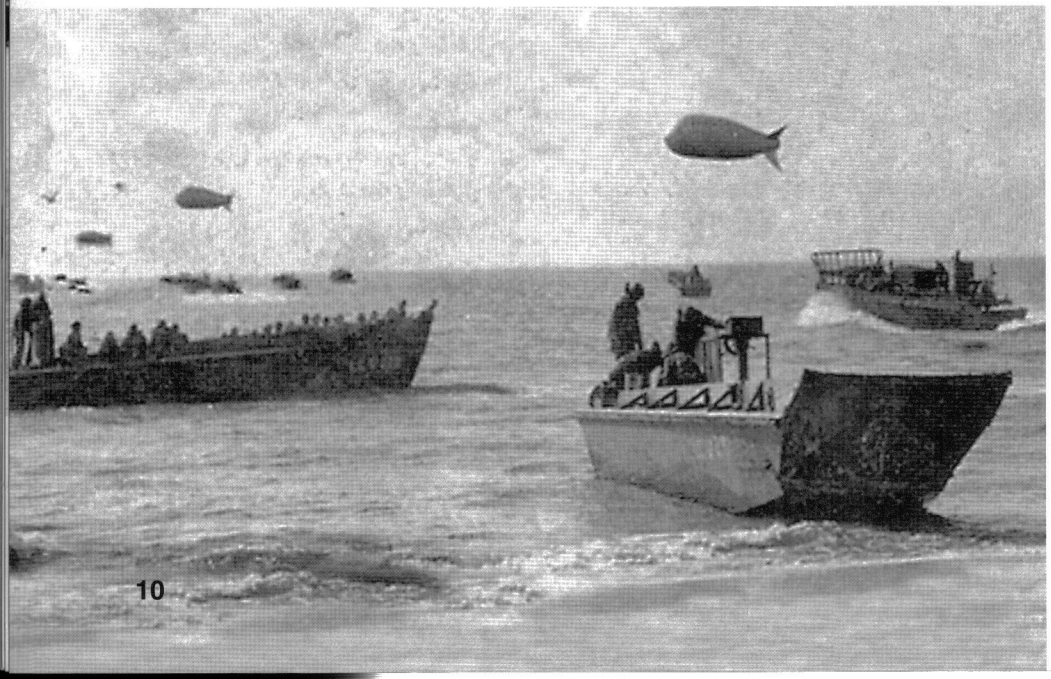
A Landing Craft Vehicle (LCV) (PA2-12) from the attack transport USS HARRIS (APA-2), loaded with troops, heads for a beachhead in 1943. The LCV was an improvement over the LCP (R and L) by offering the ability to carry a vehicle as well as troops to the beachhead. The wooden hull LCV could carry either a one ton (0.9 MT) truck or 36 fully armed troops. (USN)



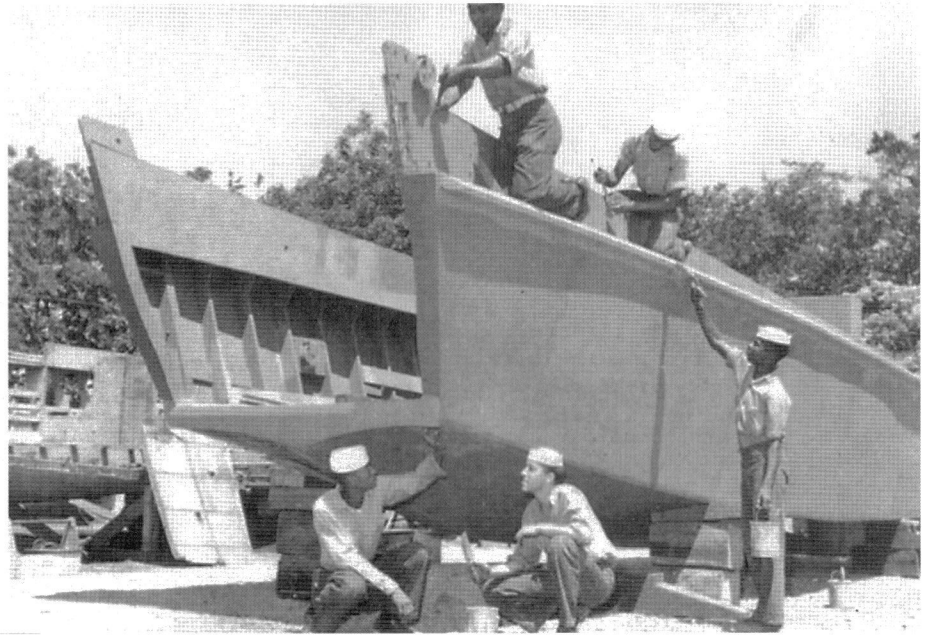
LCVs from the attack transport USS HUNTER LIGGETT (APA-14) head for the beach in 1944. The officer standing with the flag in boat number 9 is assembling the boats for the attack on the beach. Cargo nets hanging from HUNTER LIGGETT's side were used by troops to climb into the LCVs. (USN)

An LCV moves off the beachhead at Adak, Alaska in 1943. The 36 foot long LCV was powered by a single diesel or gasoline engine, depending on availability. Its range was 63 miles (101.4 KM) and top speed was 9 knots (10.4 MPH/16.7 KMH). The usual armament was a single .30 caliber machine gun and it had a crew of three men and one officer. (USN)

Two LCVs, including LCV 25, move around the beach at Normandy, France in June of 1944. The far LCV is delivering troops to the expanding Allied beachhead. A Landing Craft, Mechanized (LCM) has just left the beach headed out to a waiting transport. Barrage balloons are deployed to discourage attacks by low flying German aircraft. (USN)



Sailors paint and tighten bolts on an LCV while training at the Hampton Institute in Hampton, Virginia. The LCV's bow ramp was removed to allow full access to the troop compartment. Its hull was constructed of wood, a non-essential material for the war effort. Wood was abundant in the southern United States, where most LCVs were produced. (National Archives)



Landing Craft, Vehicle Personnel

The Landing Craft, Vehicle Personnel (LCVP) was called the most important weapon to come out of World War Two. This was due to its ability to land troops and equipment on an enemy shore, withdraw, reload, and return numerous times to resupply the beachhead. The LCVP was a development of the earlier LCV and LCP and was also designed by Andrew Jackson Higgins of New Orleans, Louisiana.

The LCVP was constructed entirely of wood (oak, pine, and mahogany), with the exception of the steel bow ramp. This craft was 35 feet 9 inches (10.9 M) in overall length, with a maximum beam of 10 feet 6 inches (3.2 M). Its draft was rated at 3 feet 5 inches (1 M) forward when fully loaded and 2 feet 2 inches (.7 M) forward when light. The LCVP displaced 15,000 pounds (6804 KG) lightly loaded, 18,500 pounds (8391.6 KG) at hoisting weight, and 26,600 pounds (12,065.8 KG) fully loaded. Either a sling or davits on the parent ship could hoist the LCVP. It had a maximum speed of 12 knots (13.8 MPH/22.2 KMH) light and nine knots (10.4 MPH/16.7 KMH) fully loaded. Power was provided by a 225 HP Gray Marine 64HN9 six-cylinder diesel engine. The range on 180 gallons (681.4 L) of onboard fuel was 110 nautical miles (126.7 miles/203.8 KM) at full power and full load. A few LCVPs were powered by 250 HP Hall-Scott gasoline engines and were primarily used for training.

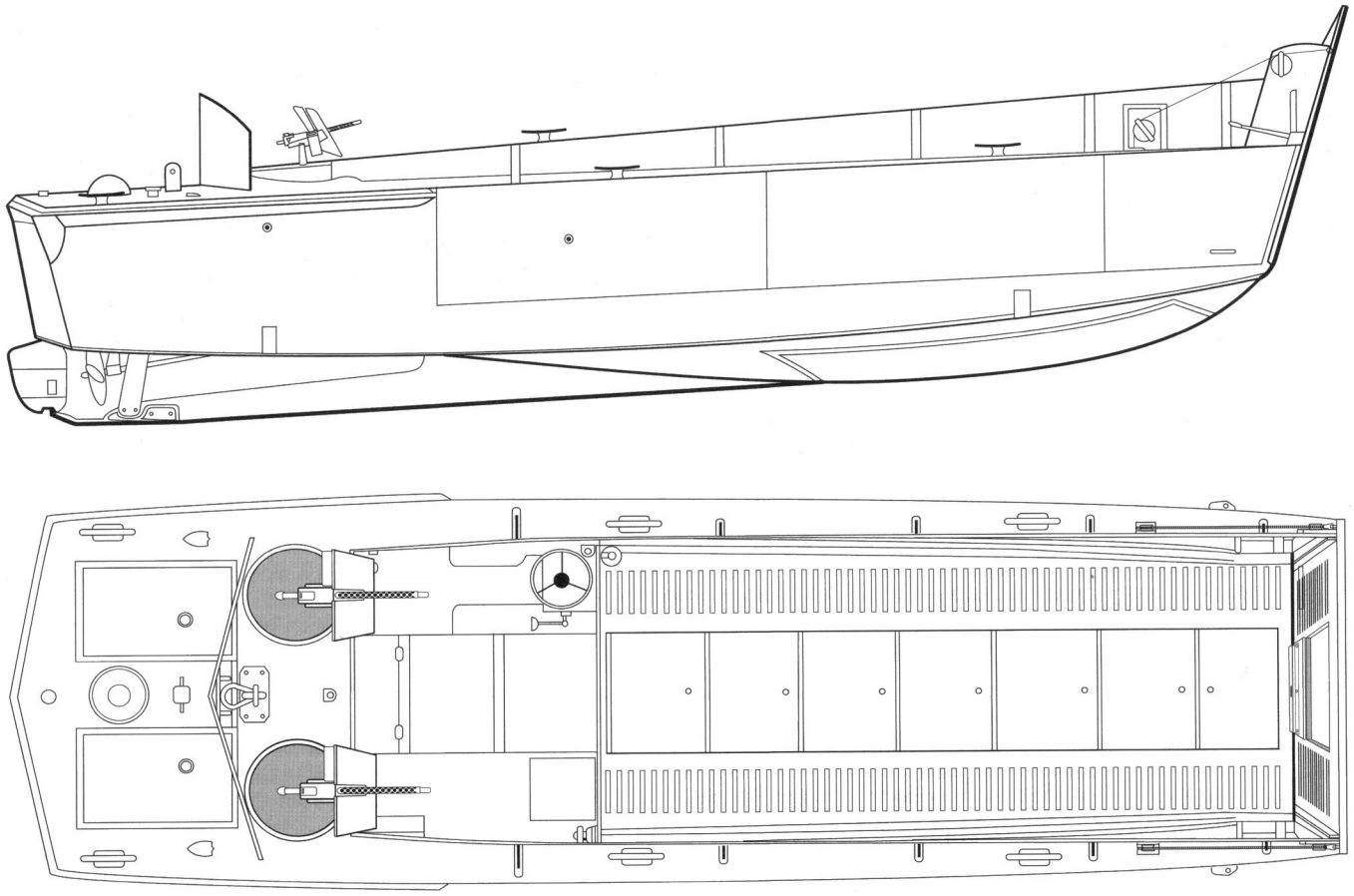
The LCVP normally carried a crew of three: a coxswain, a mechanic (engineer), and a crew hand. The latter two were also responsible for manning the .30 caliber (7.62MM) M1919 machine guns when they were fitted. The gunners sat in cockpits situated just forward of the splashboard on the aft deck. The LCVP's cargo well was 17 feet 3 inches (5.3 M) in length and 7 feet 10 inches (2.4 M) at maximum width, with an interior height of 5 feet (1.5 M). The bow ramp was operated by wire cables attached to an electric winch located on either side of the aft interior hull. The starboard side bulkhead contained the emergency tiller and a ramp equalizing sheave and cable guard. The exterior hull sides were fitted with .2 inch (6MM) Special Treatment Steel (STS) armor protection for the crew, troops, and cargo.

There were many styles of bow ramps, with most designs identifying the manufacturer of the LCVP. The steel ramp afforded some protection to the landing troops and crew and had small slit windows in them to allow the onboard troops to view the landing area. The ramp extended seven feet (2.1 M) out from the bow area to bridge the distance from the cargo deck to the beach. The bow ramp and cargo well were ribbed to increase traction for the troops and vehicles.

Higgins Industries built the majority of the over 20,000 LCVPs built by the end of World War Two. The remaining vessels were constructed by other firms, including Chris Craft and Owens Yacht. Losses were extremely high – as expected. During the invasion of Normandy on 6 June 1944, 26 LCVPs were lost on Utah Beach and 55 more on Omaha Beach out of an available 1089 craft. The LCVP was the most common type of vessel in the US Navy, and it comprised over 92 percent of the total inventory of ships and boats at one time.

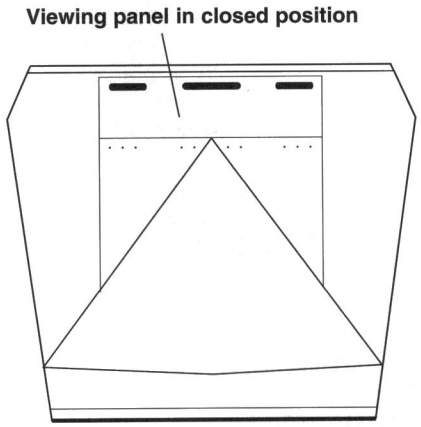
A Landing Craft, Vehicle Personnel (LCVP) opens its bow ramp during a stateside demonstration. Lifting cables, an emergency tiller for steering, and other equipment are placed on the well deck. The bow ramp's equalizing sheave and cable guard are mounted on the starboard interior hull side. (USN)

Two LCVPs – including PA18-24 – from the transport USS PRESIDENT JACKSON (APA-18) move toward the beach at Bougainville, Solomon Islands in November of 1943. The craft are delivering supplies to US forces on the island, under the watchful eye of a gunner armed with two .30 caliber machine guns from a nearby Patrol Torpedo (PT) boat. Cruising in the background are attack transports, a Landing Ship, Tank (LST), and another PT boat from the invasion force. (National Archives)



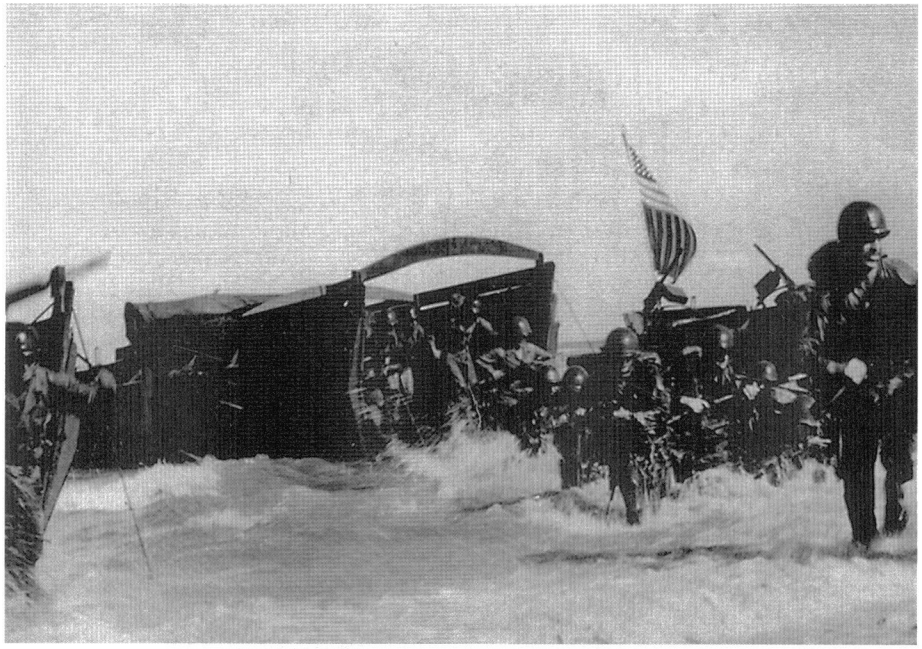
Bow Ramp

(Style varied among manufacturers)



Landing Craft, Vehicle, Personnel (LCVP) Specifications

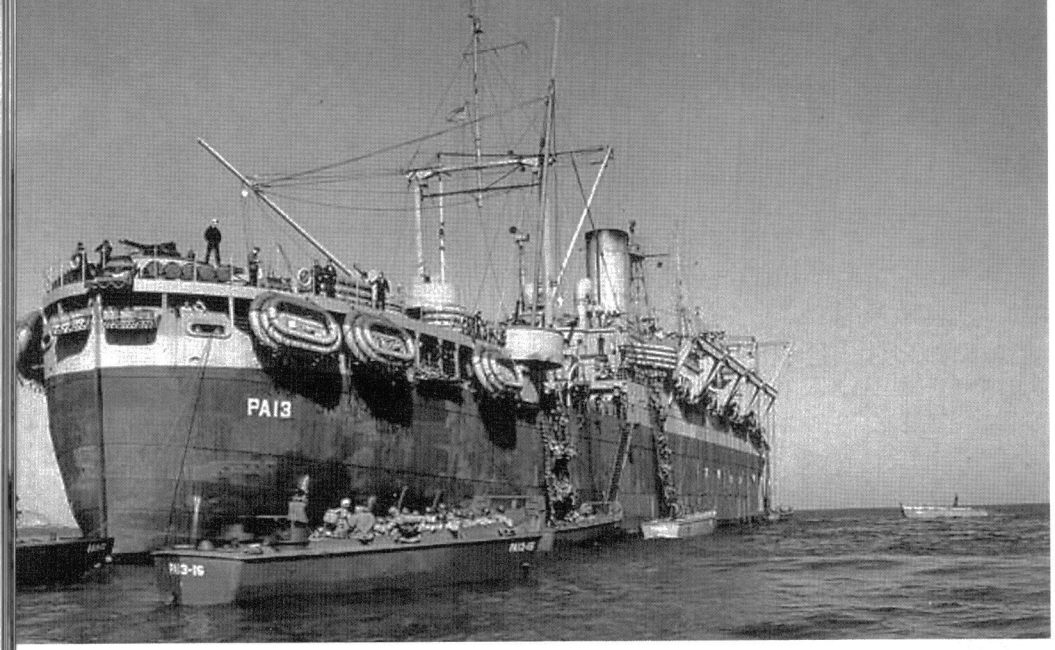
Length:.....35 feet 9 inches (10.9 M)
Beam:.....10 feet 6 inches (3.2 M)
Draft:.....3 feet 5 inches (1 M)
Displacement:..18,500 pounds (8391.6 KG) hoisting, 26,600 pounds (12,065.8 KG) full load
Propulsion:.....One 225 HP diesel engine/One screw
Speed:.....9 knots (10.4 MPH/16.7 KMH)
Armament:.....Two .30 caliber (7.62MM) or .50 caliber (12.7MM) machine guns in aft hull cockpits
Capacity:.....36 troops or 8100 pounds (3674.2 KG) of equipment
Complement:....Three



Troops from the 163rd Regimental Combat Team, US Army storm the beach at Wadke Island, New Guinea on 18 May 1944. The LCVPs that brought the troops ashore were assigned to the VII Amphibious Group. Canvas covers draped on stringers over the cargo deck afforded some protection from the weather. (National Archives)

Troops from the US Army's 1st Infantry Division land in the surf off Omaha Beach in Normandy, France early on the morning of 6 June 1944. The ramp is coming up in preparation for the LCVP to return to the attack transport USS SAMUEL CHASE (APA-26). More invasion troops were then loaded from the US Coast Guard-manned transport into the LCVP. (USCG)

US Army troops climb down cargo nets deployed over the side of the attack transport PRESIDENT JACKSON and into a waiting LCVP to attack Empress Augusta Bay, Bougainville in November of 1943. This was the normal procedure for troops to embark into landing craft. The LCVP's gun cockpits have .30 caliber machine guns mounted to afford some additional protection for the attacking troops. (National Archives)



LCVPs wait their turn to come alongside the attack transport USS JOSEPH P. DICKMAN (APA-13) in June of 1944. The landing craft were loading troops for yet another run to the beach during the Normandy Invasion. JOSEPH P. DICKMAN is camouflaged in Measure 22, the Graded System of Navy Blue (5-N) on the lower hull and Haze Gray (5-H) on the rest of the ship. The LCVPs are painted Haze Gray to match the ship. (National Archives)

LCVPs from USS LEONARD WOOD (APA-12) and the cargo ship USS JUPITER (AK-43) move in line abreast in Lingayen Gulf off the Philippines on 9 January 1945. The landing craft were en route to the beach at Luzon. The LCVPs have individual boat numbers on the bow beside the parent ship's hull numbers, minus the first letter designation. (USCG)

A US Marine Corps (USMC) scout dog is lowered down to a LCVP (PA27-3) from the attack transport USS GEORGE CLYMER (APA-27). Marines climb down cargo nets to embark onto the landing craft. Both USMC scout dogs and LCVPs proved invaluable to the troops that took the beaches. (National Archives)

A replica LCVP (PA33-21) is displayed at the National D-Day Museum in New Orleans, the city where Higgins Industries built many of these 'Higgins boats' during World War Two. A group of volunteers – including former Higgins employees – built this vessel from the actual plans. The LCVP was completed in 1999 and donated to the museum. (R.S. Delaney)

Landing Craft, Mechanized

The Landing Craft, Mechanized (LCM) was produced in seven Marks by the US and Great Britain for their amphibious forces during World War Two. The US Navy, Army, and Coast Guard utilized the Marks 2, 3, and 6. The British forces used the Marks 1, 4, 5, and 7. In December of 1941, the US Navy requested designs for an enlarged landing craft that could handle and land a light tank. They contacted Higgins Industries in New Orleans and requested a larger design than the LCVP. A few days later, several naval officers traveled to New Orleans to examine some designs. They found a working prototype of the **LCM (2)**, a landing craft with a bow ramp and the ability to carry a 16 ton (14.5 MT) tank. Higgins had built the LCM prototype in just over 60 hours!

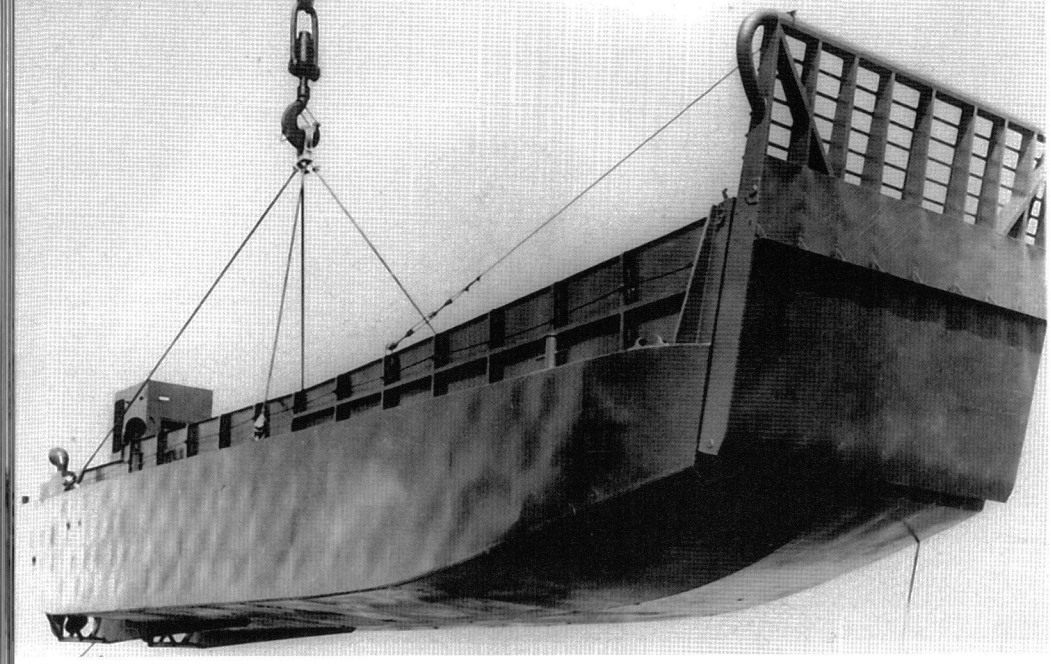
The LCM (2) was 45 feet (13.7 M) in length and had a beam of 14 feet (4.3 M) with a loaded draft of 1 foot 4 inches (0.4 M) forward and 4 feet (1.2 M) aft. Displacement was rated at 58,000 pounds (26,308.8 KG) fully loaded with a 13 ton (11.8 MT) tank or 30,000 pounds (13,608 KG) of cargo. Two 100 HP Kermath six cylinder gasoline engines provided power to the twin screws. Its speed was rated at 7 knots (8.1 MPH/13 KMH) and range was 75 miles (120.7 KM) at that speed. Unlike the earlier wooden landing craft, the LCM (2) was constructed entirely of steel. The three-man crew (coxswain and two gunners) was protected by 6MM STS armor around the control station and the LCM (2) was provided with a pair of .30 caliber (7.62MM) Browning M1919 machine guns. Approximately 3400 LCM (2)s were built before they were superceded by the improved **LCM (3)** during 1943.

The LCM (3) was designed to carry and land a 30 ton (27.2 MT) (medium) tank or motor vehicles on the beach. Its length was increased by five feet (1.5 M) to 50 feet (15.2 M) overall, while the beam remained at 14 feet. The forward draft increased by 1 foot 8 inches (.5 M) to 3 feet (.9 M), while the rear draft remained at four feet. The LCM (3) cargo well was 31 feet (9.4 M) long and 10 feet (3 M) wide. Its displacement was 52,000 pounds (23,587.2 KG) light and 104,000 pounds (47,174.4 KG) fully loaded. Power was provided by either two 100 HP Kermath six cylinder gasoline engines or two 225 HP Gray Marine diesels. The diesel-powered LCM (3)'s speed was rated at 8 knots (9.2 MPH/14.8 KMH) fully loaded and its range was 140 miles (225.3 KM) at full speed. Its maximum endurance was 850 miles (1367.9 KM) at an economical 6 knots (6.9 MPH/11.1 KMH). The steering position was protected by 6MM High Tensile Steel (HTS) and some were fitted with plastic armor on the coxswain's position. The LCM (3) was usually armed with two .50 caliber (12.7MM) Browning M2 (HB; Heavy Barrel) machine guns, situated to either side of the steering position. A few LCM (3)s were fitted with rocket racks and redesignated as **Landing Craft, Mechanized (Rocket)**, or LCM (R). They were mainly used in the Pacific until the **Landing Craft, Infantry (LCI)** and **Landing Ship, Medium (LSM)** were fitted with rocket launching equipment. Various US shipyards built 8631 LCM (3)s during the conflict.

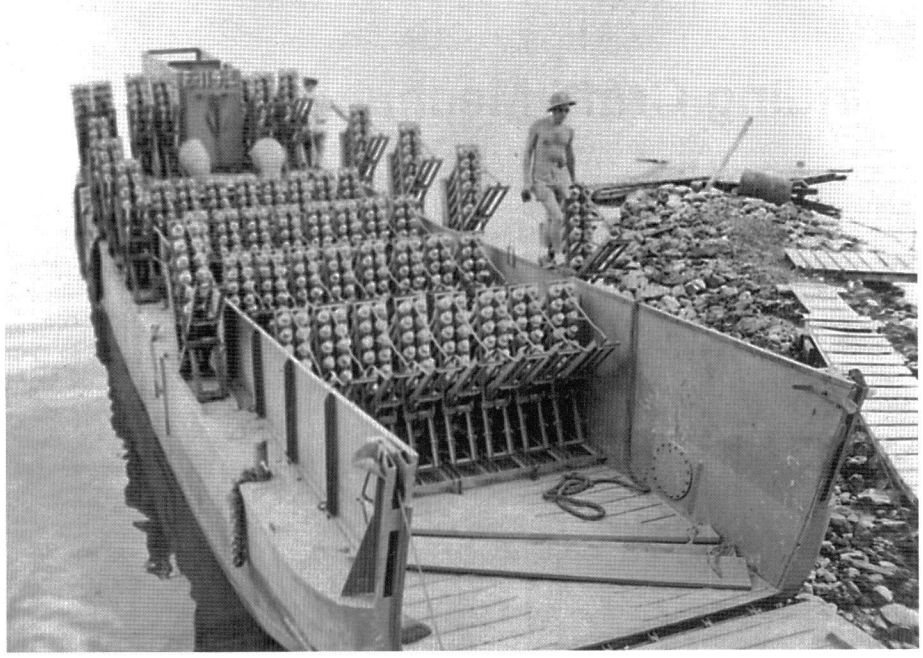
The **LCM (6)** was an improved LCM (3) built for the US Army and entered service in 1943. It had a six feet (1.8 M) section added to the hull amidships, which increased its length to 56 feet (17.1 M). The hoisting weight was 69,600 pounds (31,570.6 KG) and the full load displacement was 137,600 pounds (62,415.4 KG). The LCM (6) was too long and heavy to carry in ships' davits. Instead, it had to be carried in sections on the deck of transports and assembled once in the water or carried in the well deck of a **Landing Ship, Dock (LSD)**. The LCM (6) carried either a 34 ton (30.8 MT) tank, 68,000 pounds (30,844.8 KG) of cargo, 120 fully equipped troops, or a combination of troops and vehicles. Other than the six foot hull addition, the LCM (6) retained the LCM (3)'s characteristics. The majority of the 2513 LCM (6)s built went to the US Army in the Pacific.

A US Army White M3A1 scout car, armed with a .50 caliber (12.7MM) machine gun, prepares to disembark from a Landing Craft, Mechanized (LCM) Mk 2 in 1942. This vessel (P37-2) was assigned to the transport USS PRESIDENT JACKSON (AP-37, later designated APA-18). The LCM (2) was 45 feet (13.7 M) in overall length, with a beam of 14 feet (4.3 M) and a full load displacement of 58,000 pounds (26,308.8 KG). (USN)

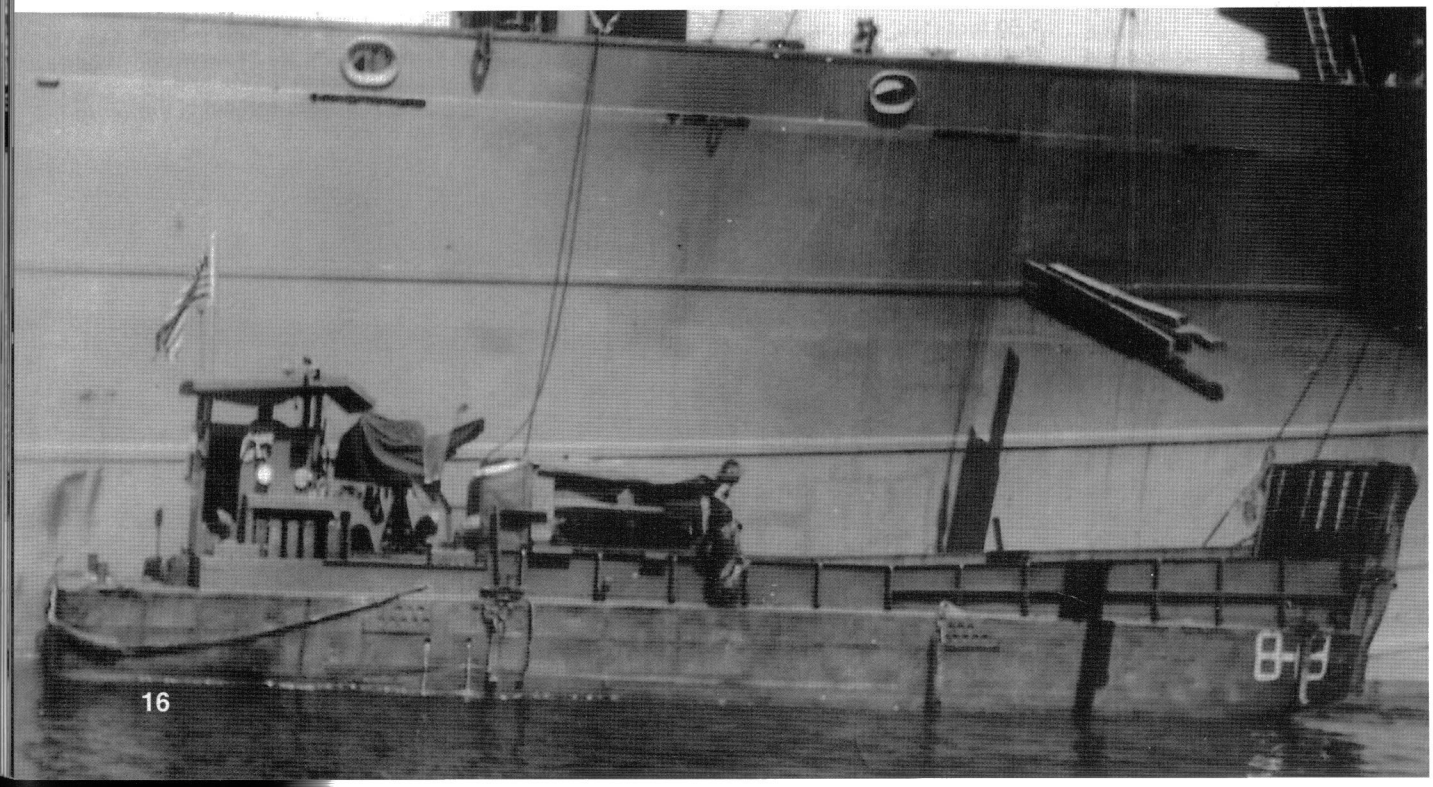
A 50 foot (15.2 M) long LCM Mk 3 runs on the Mississippi River from the Higgins Boat Works in 1943. The LCM (3) was five feet (1.5 M) longer than the LCM (2) and had an improved ramp, which was larger and crossgridded for greater strength. LCMs had an armored position for the coxswain. Cables on the decking lifted the LCM in and out of the water from the transport ship while the craft was loaded. (Real War Photos)



An LCM (3) is lifted off the water, displaying the hull shape and placement of the propellers and propeller guards. This loading ramp displays another style of crossgridding; the style varied during LCM production. The LCM (3) could carry a 30 ton (27.2 MT) tank, 120 fully equipped troops, or 60,000 pounds (27,216 KG) of cargo. (Real War Photos)



An LCM (3) has been modified to carry 5 inch (12.7 CM) rockets and designated an LCM (R). The rocket racks were placed in the cargo well and on the decking. Each LCM (R) was capable of launching over 500 rockets, which added considerable firepower to the landing force. (Real War Photos)

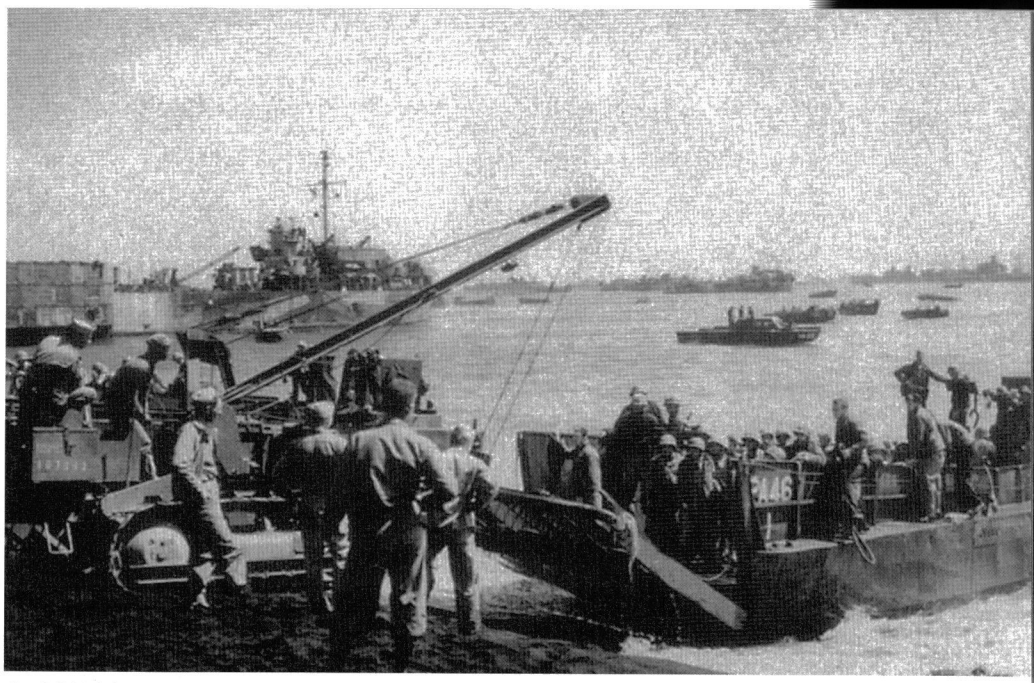


All LCMs were equipped with a 'Danforth' style kedge anchor in its transom. This anchor was deployed using a windlass before landing, which enabled the LCM to work its way back off the beach into deeper water.

LCMs were first used in the Pacific during the invasion of Tarawa in November of 1943. They saw service throughout the conflict in the Pacific, Mediterranean, and North Atlantic theaters. In the 21st Century, a design similar to the World War Two era LCM is being used to land US amphibious troops on foreign beaches.

An LCM (3) from the 4th Engineering Special Brigade (ESB) takes on a load of lumber from a US Navy Transport (AP) in the Pacific in late 1944. A 'dog house' shelter was built just forward of the steering position to afford some protection from the tropical sun and heat. This LCM is camouflaged in a Tropical Green scheme adopted from the fall of 1944. This scheme consisted of three Outside Greens (approximately FS34227, FS34108, and FS34092) and Outside Brown (approximately FS33105). (US Army)

An LCM (3) (PA46-2) from the attack transport USS KNOX (APA-46) hits the beach at Iwo Jima on 19 February 1945. In the background, the amphibious fleet continues to assist by landing troops and supplies for the assault on the Japanese held island. The attack transports usually carried four LCMs on its deck. (USN via Dave Mountain)

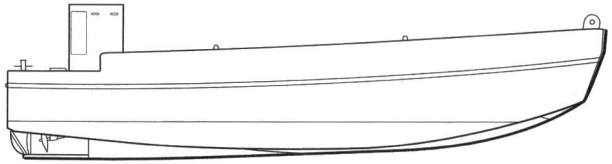


An LCM (3), boat Number 1 from KNOX, prepares to land US Marines on Red Beach, Iwo Jima in February of 1945. A crane mounted on a crawler tractor stands ready to unload equipment for the invasion forces. The LCM was camouflaged in a Measure 21, Navy Blue scheme for the invasion. (USCG)

LCM Development

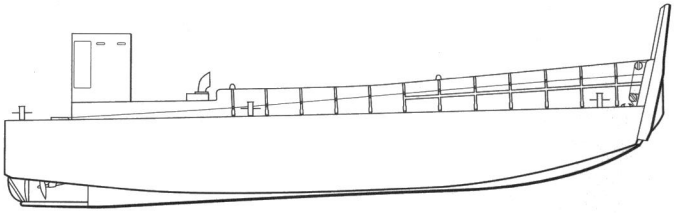
LCM (2)

Overall Length: 45 feet (13.7 M)



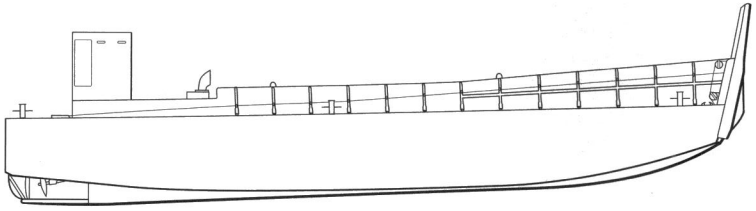
LCM (3)

Overall Length: 50 feet (15.2 M)

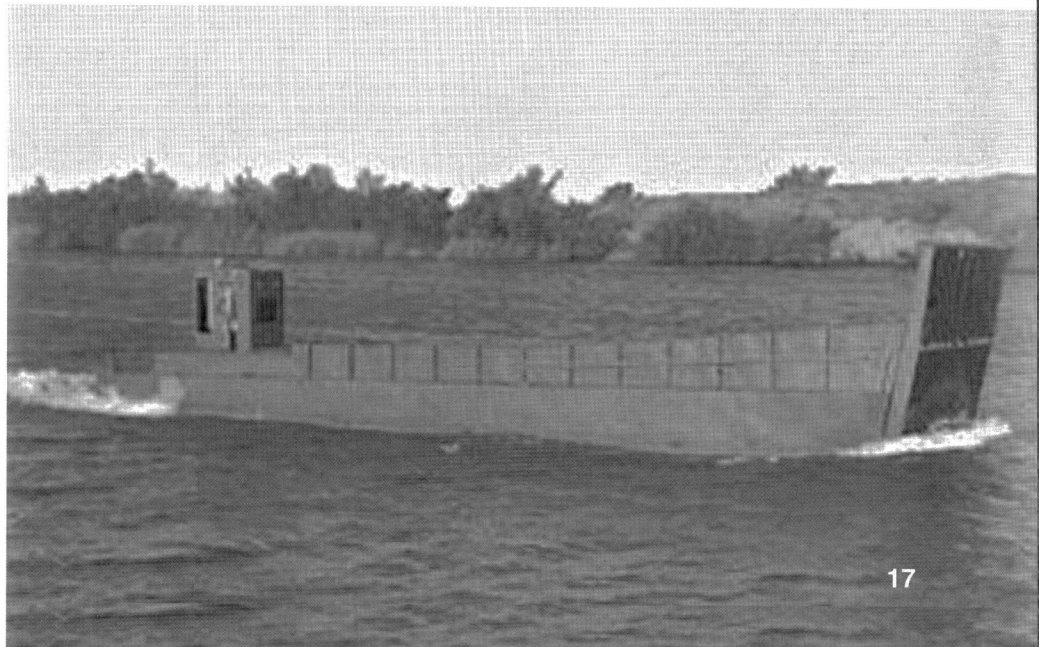


LCM (6)

Overall Length: 56 feet (17.1 M)

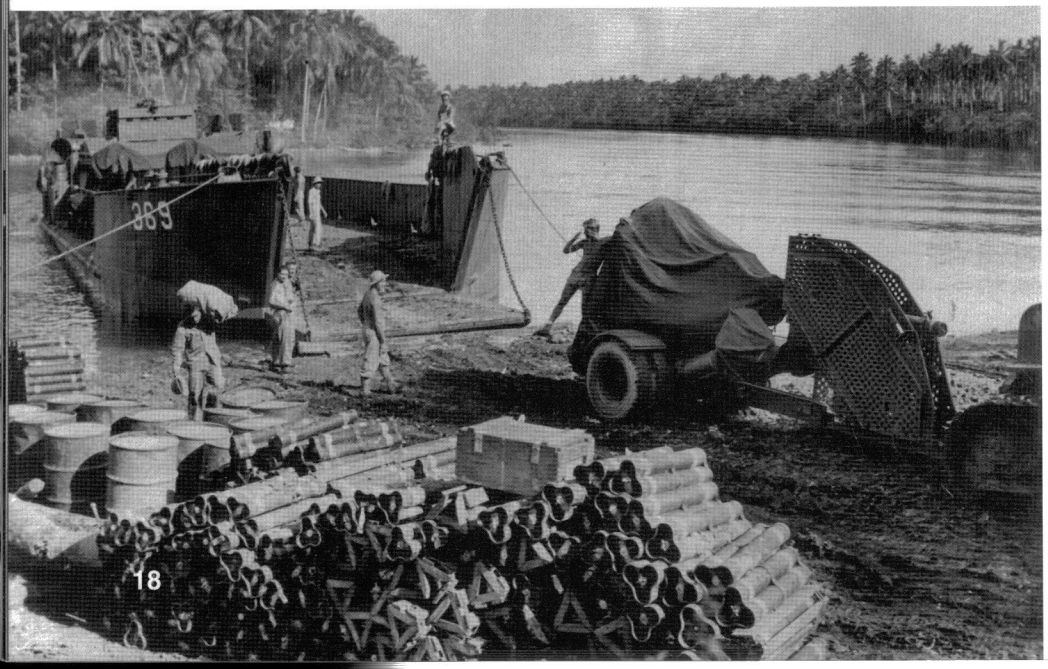


An LCM Mk 6 cruises on a test voyage near its stateside yard. The 56 foot (17.1 M) long vessel entered service in late 1944 and was used for US Army amphibious operations in the Pacific. The LCM (6) remained in US service until it was replaced by the 73 feet 8.4 inch (22.5 M) long LCM (8) in 1959. (USN)



Landing Craft, Tank (LCT)-70 approaches the beach with its ramp lowered to unload a ten ton (9.1 MT) wrecker somewhere in the Pacific in 1943. The LCT is camouflaged in the Tropical Green Measure. Vegetation obscures a damaged Japanese landing barge on the beach in the foreground. (Real War Photos)

US troops unload a 90MM anti-aircraft gun from LCT-369 at West Arun Landing on New Georgia Island, the Solomons in July of 1943. Gasoline drums and 90MM ammunition are stacked on the beach prior to it being loaded for the trip to the island's interior. The LCT is camouflaged in a Tropical Green Measure for use in the jungle environment. (Real War Photos)



Landing Craft, Tank

The **Landing Craft, Tank (LCT)** was built in six different Marks during World War Two. The first four Marks were constructed and utilized by the British, while Marks Five and Six were built and used by both American and British forces. These latter two marks became the standard LCT for the United Nations (Allies). The LCT was the largest of the landing craft to be carried by transports (LSTs and LSDs). It was also the smallest of craft to be assigned hull numbers.

The **LCT (5)** was constructed in three watertight sections – the bow, amidships, and stern areas. This craft's overall length was 114 feet 2 inches (34.8 M), with a beam of 32 feet (9.8 M). The draft was rated at 2 feet 10 inches (0.9 M) forward and 4 feet 1 inches (1.2 M) aft. Its displacement was 133 tons (120.7 MT) light and 283 tons (256.7 MT) fully loaded. The LCT (5)'s cargo well deck was 90 feet (27.4 M) long. This allowed the vessel to carry five 30 ton (27.2 MT) tanks, four 40 ton (36.3 MT) tanks, three 50 ton (45.4 MT) tanks, or nine trucks. Its maximum cargo capacity was 150 tons (136.1 MT), which was limited by the available freeboard.

The LCT (5) was armed with two single barrel 20MM Oerlikon dual-purpose (anti-aircraft and anti-surface) cannon – one on each side of the wheelhouse. The wheelhouse was protected by 10 pound (4.5 KG) plastic armor for splinter protection. The LCT (5) was manned by a crew of 11: one officer and 10 sailors.

This vessel was powered by three 225 HP Gray Marine six-cylinder diesel engines, which turned three screws. The powerplant enabled the LCT (5) to achieve a maximum speed of 8 knots (9.2 MPH/14.8 KMH). Endurance was rated at 1200 nautical miles (1381.8 miles/2223.8 KM) at 7 knots (8.1 MPH/13 KMH) with the available 3423 gallons (12,957.4 L) of onboard diesel fuel. There were no troop provisions, but 650 gallons (2460.5 L) of fresh water was carried for crew and troop use. Five hundred LCT (5)s were constructed, until they were superseded by the improved **LCT (6)** in the spring of 1943. The LCT (5)s were assigned the hull numbers LCT-1 through LCT-500.

The LCT (6) was an LCT (5) designed to permit stern loading and increase living quarters for the crew. The LCT (6) had a stern gate, which enabled it to act as a causeway for offloading vehicles and troops from an LST in deep water. The craft also had a bow ramp for landing vehicles and troops on the beach.

The LCT (6)'s overall length of 119 feet (36.3 M) was 4 feet 10 inches (1.5 M) longer than the earlier LCT (5). The later vessel's beam remained at 32 feet. Its forward draft increased by 8 inches (20.3 CM) to 3 feet 6 inches (1.1 M), while its aft draft decreased by one inch (2.5 CM) to 4 feet (1.2 M). The LCT (6) cargo well deck was 114 feet (34.7 M) long and 24 feet (7.3 M) wide. Its displacement was rated at 143 tons (129.7 MT) light and 309 tons (280.3 MT) fully loaded. These totals were an increase of 10 tons (9.1 MT) in light and 26 tons (23.6 MT) fully loaded displacements over the earlier LCT (5). The cargo capacity was 150 tons (136.1 MT) as in the earlier LCT (5). Three 225 HP Gray Marine six-cylinder diesel engines powered the LCT (6), whose range and speed was the same as the LCT (5). The maximum endurance with the available 3450 gallons (13,059.6 L) of diesel fuel was 1200 miles (1931.2 KM) at 7 knots (8.1 MPH/13 KMH). Its maximum speed was 8 knots (9.2 MPH/14.8 KMH). LCT (6)s carried 1730 gallons (6548.7 L) of fresh water for the crew and embarked troops.

The LCT (6) pilothouse was moved from the center to the starboard side of the hull to make room for the extended cargo deck. The pilothouse was armored with 20 pound (9.1 KG) plastic armor on the front, 15 pound (6.8 KG) on the sides, and 10 pound (4.5 KG) on the splinter

US Army troops wade ashore from LCT-533 at Normandy during the 6 June 1944 invasion of 'Fortress Europe.' The LCT is painted in Measure 21, the Navy Blue System and appears to be beached in approximately four feet (1.2 M) of water. Other vessels of the invasion fleet – including another LCT (6) – cruise in the background. (Real War Photos)

An American M16 halftrack multiple Gun Motor Carriage is about to be landed from LCT-25 at the Normandy beachhead on 4 July 1944. The LCT Mk 5 is painted in a Measure 21 (Navy Blue) camouflage scheme and is armed with a 20MM cannon on the port gun position. The white US on the bow indicated a US vessel; British landing craft had UK on the bows. (Real War Photos)

shields around the guns. It was armed with two 20MM Oerlikon cannon in single mounts. These weapons were fitted in armored positions on either side of the cargo deck on the hull superstructure.

The LCT (6)'s complement consisted of one officer and 12 sailors plus space for eight troops. Nine hundred of these vessels were built during the war and they were assigned the hull numbers LCT-501 through LCT-1400.

Fresh from fitting out, LCT-1362 heads for the Pacific to take part in yet another invasion. This LCT (6) is camouflaged in Measure 33-12L for the Pacific Theatre. This scheme consisted of Pale Green (5-PG; approximately FS34552) and Ocean Green (5-OG; approx. FS34227). Portions of the starboard side were touched up with what is believed to be Haze Gray (5-H; approx. FS35237). The boot topping just above the waterline is black. Pennant number 1362 is painted on the stern gate, which lowered for offloading personnel and equipment from LSTs. The device on the port side stern area is the 'Danforth' style kedge recovery anchor. The anchor was deployed before reaching the beach to enable the LCT to pull itself back to deeper water. (Floating Drydock)

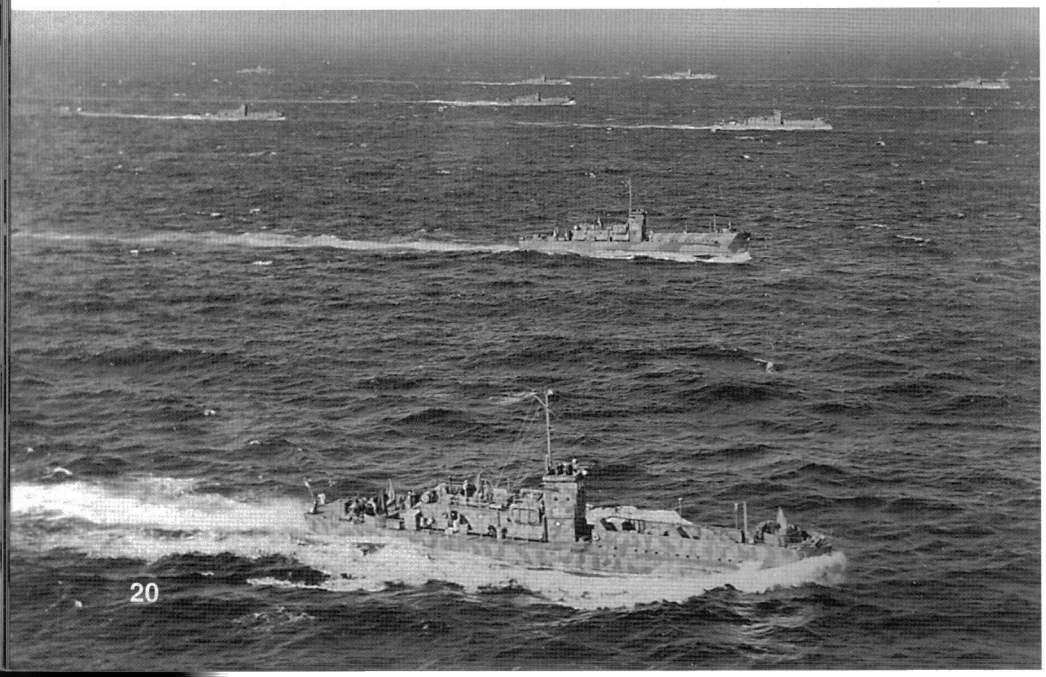
Landing Craft, Infantry (Large), Landing Craft, Infantry (Gunboat), and Landing Craft, Support (Large)

The **Landing Craft, Infantry (Large)** or **LCI (L)** was designed solely as an ocean transport to carry troops directly to the beach. There was space to carry up to 200 troops and their associated equipment or 75 tons (68 MT) of cargo on the deck. They would forever be called the 'Water Bug Navy.' When an admiral aboard a battleship saw LCIs scurrying around delivering troops to the beach during an invasion, he proclaimed that the LCIs were just like water bugs.

The LCI (L) was built in two different classes: the LCI (L)-1 through 350 had side ramps; while the LCI (L)-351 through 1098 primarily had a center ramp. The earlier class had a gangway placed on either side of the bow, which was lowered to the beach once the LCI landed. This exposed the troops to heavy enemy fire and the centerline ramp design came about to reduce the risk, although this increased the time for unloading troops over that of the side ramps.

The LCI (L) was 160 feet (48.8 M) long with a beam of 23 feet 3 inches (7.1 M). Its draft was rated at 5 feet 4 inches (1.6 M) forward and 5 feet 11 inches (1.8 M) aft when fully loaded. This craft displaced 387 tons (351.1 MT) fully loaded, 238 tons (215.9 MT) maximum for landing, and 194 tons (176 MT) light. Propulsion was provided by eight General Motors diesel engines with a combined power rating of 1600 HP. The diesels provided power to a pair of variable pitch screws – four engines per shaft. Its endurance on 120 tons (108.9 mt) of available fuel was rated at 8700 miles (14,000.9 KM) at 12 knots (13.8 MPH/22.2 KMH). This was at 350 tons (317.5 MT) displacement and 45° of pitch on the screws.

A flotilla of Landing Craft, Infantry (Large) or LCI (L)s sail toward the Solomon Islands on 1 April 1943. They are painted in various types of camouflage schemes. The LCI (L) had a maximum speed of 15.5 knots (17.8 MPH/28.7 KMH) when at its maximum landing displacement of 238 tons (215.9 MT). It had 1.75 inch (4.45 CM) plastic armor protection for the conning tower, pilothouse sides, and the gun tubs. (Real War Photos)



The LCI (L)-1 through 350 were armed with four 20MM Oerlikon cannon. One of these weapons was mounted on the bow, a second aft of the pilothouse, and the other two were fitted on the aft deck. The LCI (L)-351 through 1098 were armed with five 20MM cannon: one on the bow, two just forward of the pilothouse, and two more just aft the pilothouse on the same deck. The 200 troops were accommodated below deck in spaces that – when fully loaded – were cramped at best. The LCI carried a crew of 24 officers and men.

The **Landing Craft, Infantry (Gunboat)** or **LCI (G)** was an LCI (L) converted into a close-in support platform for landing operations. The conversions included converting the Number One forward troop space into a storage area, the Number Two forward troop space into a magazine, the amidships troop space became crew accommodations, and the aft troop space became another magazine. Five officers and 65 men were required to operate the Gunboats.

The US Navy converted 86 LCI (L)s to LCI (G) configuration and there were six different sub types that were configured with different types of rocket launchers, mortars, and guns.

A further 42 LCI (L)s were converted into **Landing Craft, Infantry (with Mortars)** by installing one 40MM cannon, four 20MM cannon, and three 4.2 inch (107MM) chemical mortars. The internal spaces remained the same as for the LCI (G). The Mortar boat was crewed by four officers and 49 men.

Another 36 LCI (L)s were modified into a combination support-landing craft by converting the aft troop space into a rocket magazine for the six 5 inch (127MM) rocket launchers. One 40MM cannon was installed on the bow deck in place of the 20MM cannon. The four 20MM cannon were placed around the armored pilothouse.

The converted Gunboats and Mortar boats were used to lay down a preparatory beach barrage prior to landing and to provide close-in support for the landing operations. All of these conversions were made in the Pacific War Zone while the US Navy awaited delivery of yet a further type of converted LCI (L). This also utilized the basic hull structure of the LCI (L), but with new improved internal spaces for crew, ammunition, and rockets.

The **Landing Craft Support (Large) (Mark 3)** or **LCS (L)(3)** was derived from a need for a craft that could support landing operations and also intercept and destroy enemy inter-island barge traffic. US shipyards built 130 LCS (L)s and they were powered by two sets of General Motors Model 6051 diesel engines. These engines provided a maximum of 1800 HP to the pair of variable pitch screws. The LCS (L)(3)'s maximum speed was rated at 15.5 knots (17.8 MPH/28.7 KMH) at 650 revolutions per minute. Endurance with 70 tons (63.5 MT) of available fuel was 5500 miles (8851.2 KM) at a rated speed of 12 knots (13.8 MPH/22.2 KMH) at 350 tons (317.5 MT) displacement.

The LCS (L)(3) was armed with one 3 inch/50-caliber (76MM) dual-purpose gun, two twin 40MM cannon, four 20MM cannon, and ten Mk 7 rocket launchers. The 3 inch and 40MM weapons were directed by Mk 51 or Mk 52 gun directors. These directors were mounted atop the pilothouse and in an armored position on the aft deck. The gun positions and pilothouse were also armored with ten pound (4.5 KG) plastic armor.

The first LCI (L) was launched in October of 1942 and first tested in battle during the Allied invasion of Sicily on 10 July 1943. LCI (L) production ceased in October of 1944 as this was superceded in production by a new type of landing craft, the **Landing Ship, Medium (LSM)**.

The US lost 18 LCI (L)s during World War Two, with nine losses occurring during the inva-

LCI (L)-350 plows through the English Channel during the Normandy Invasion in June of 1944. The vessel is painted in the Measure 21 system of overall Navy Blue (5-N) for Operation NEPTUNE, the naval component of OVERLORD. This LCI served with US Coast Guard Flotilla 10 during the invasions of Sicily and Salerno, Italy in 1943 and during the Normandy assault. (USCG)

A US Army DUKW ('Duck') amphibious truck brings troops to the beach at Scoglitti, Sicily for loading onto LCI (L)-196 in July of 1943. This LCI is the ramp type of craft and is finished in a Measure 21, Navy Blue camouflage scheme. It is armed with four 20MM Oerlikon cannon for protection against enemy aircraft. (National Archives)

sion of Normandy, France (Operation OVERLORD) on 6 June 1944. Eight LCI (G)s and six LCS (L)(3)s were also sunk during the conflict, all in the Pacific Theatre of Operations. LCI (L)-1 was awarded the Presidential Unit Citation for her operations in the invasion of Sicily, but she was sunk off Italy on 17 August 1943.

LCI (G) Sub Types

Type A: This was armed with two 40MM Bofors cannon, three 20MM cannon, six .50 caliber (12.7MM) Browning M2 (HB) machine guns, and ten Mk 7 rocket launchers. Each launcher fired a single 5 inch (12.7 CM) spin stabilized rocket.

Type B: The armament was altered to three 40MM cannon, two 20MM cannon, five .50 caliber machine guns, and eight Mk 7 rocket launchers.

Type C: This carried two 40MM cannon, six .50 caliber machine guns, ten Mk 7 rocket launchers, and two Mk 22 automatic rocket launchers. The Mk 22 fired the same 5 inch rocket used by the Mk 7 launcher.

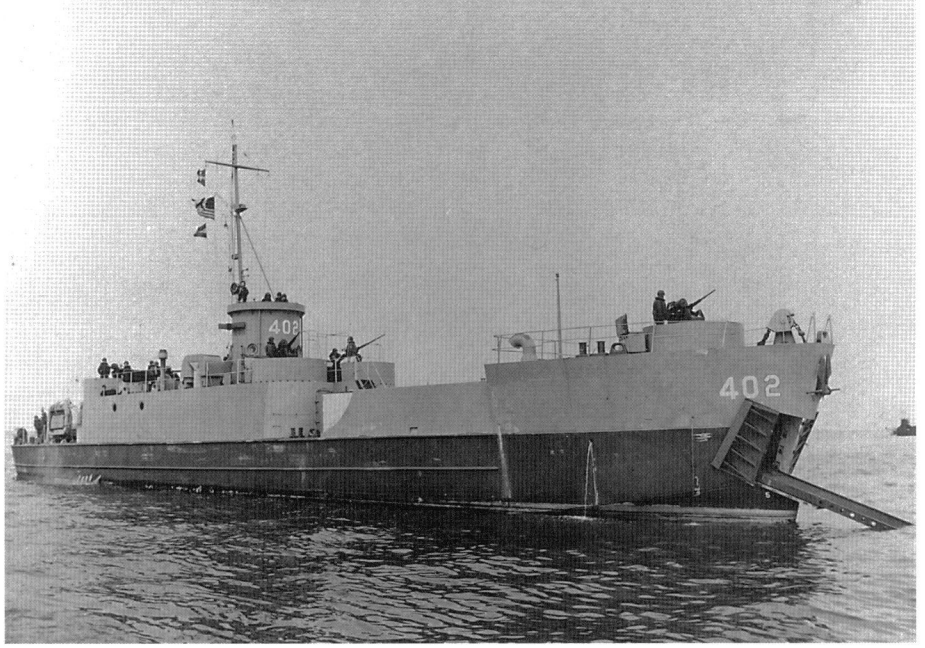
Type D: Fitted with three 40MM cannon, four 20MM cannon, and ten Mk 7 rocket launchers.

Type E: This was armed with one 40MM cannon, one 3 inch/50 caliber (76.2 CM) dual-purpose gun mounted on a bandstand, four 20MM cannon, and ten .50 caliber machine guns.

Type F: It had one 40MM cannon, three 20MM cannon, and 24 Mk 7 rocket launchers.

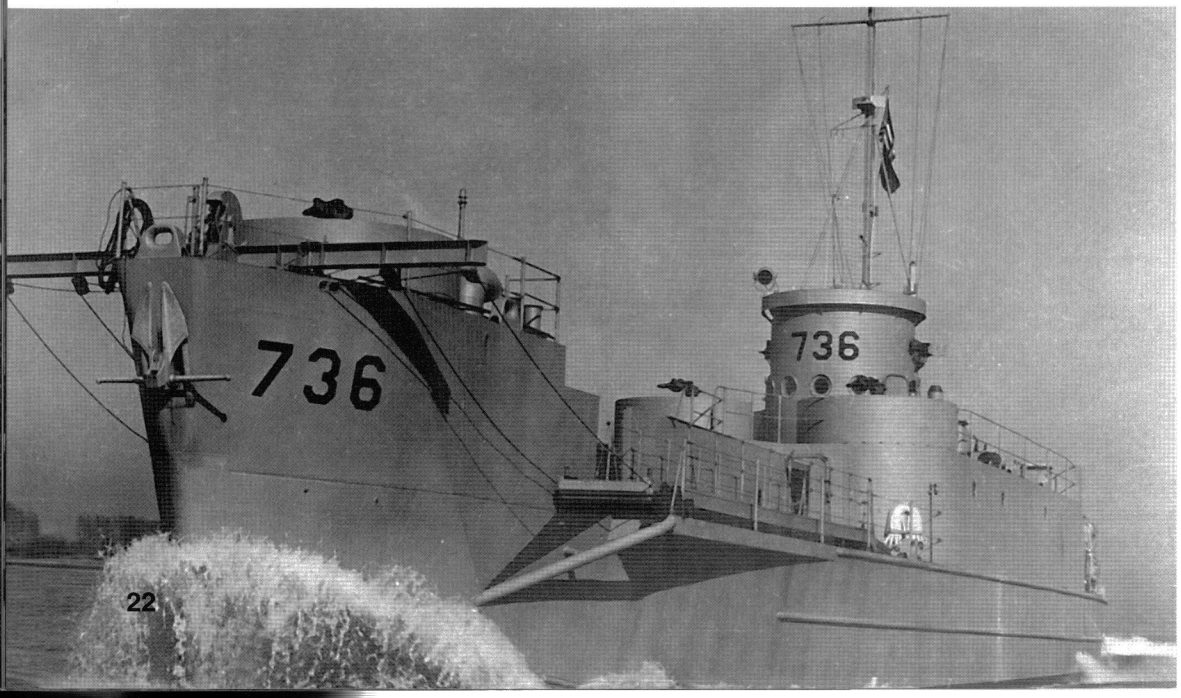
LCI (L)-531 moves at speed on 7 January 1944. It is camouflaged in Measure 22, the Graded System of Navy Blue (5-N; approximately FS35044) on the lower hull and Haze Gray (5-H; approximately FS35237) on the rest of the vessel. This LCI is the side ramp type and it is armed with five 20MM cannon. One of these weapons is mounted in the bow tub, while the other four guns are located in tubs forward and aft of the pilothouse. (Real War Photos)

New Zealand troops disembark from LCI (L)-330 on the beach at Mono in the Treasury Islands on 27 October 1943. This vessel is camouflaged in the Tropical Green System authorized for use in the South Pacific that year. The LCI's sides are painted in mottled patches and streaks in a lighter shade of green. (Real War Photos)

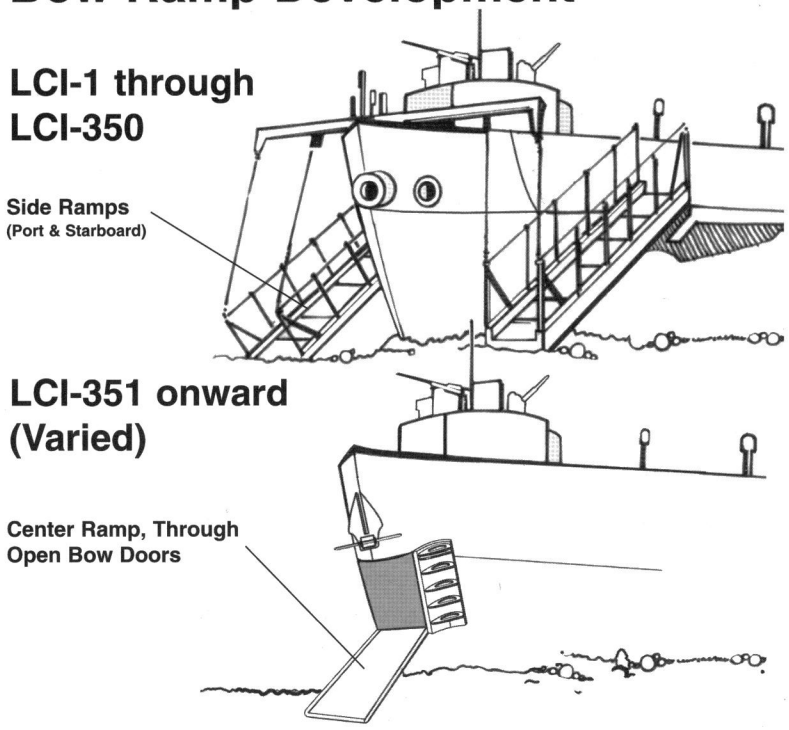


LCI (L)-402 is the center ramp type of the 160-foot (48.8 M) long landing craft. The center ramp afforded more protection for the assault troops and the landing craft did not have to come as close to the beach. The LCI is camouflaged in Measure 22, the Graded System and all the 20MM guns are manned to protect the landing troops. (Real War Photos)

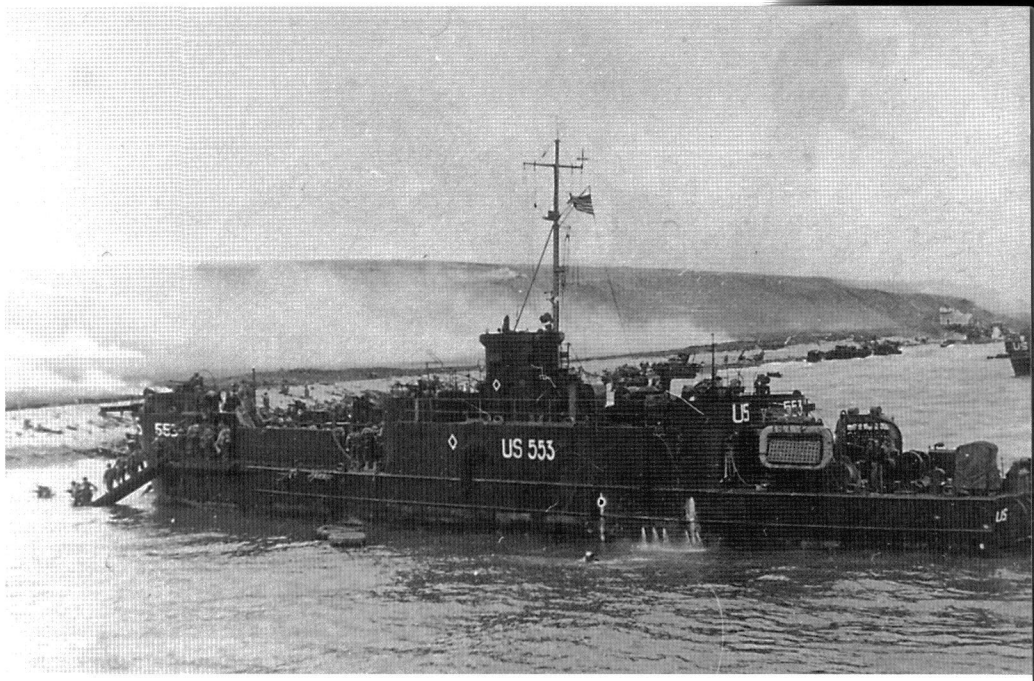
LCI (L)-736 is the side ramp type of landing craft that was constructed by Commercial Iron Works in Portland, Oregon and is out on trials in February of 1944. It is believed to be camouflaged in Haze Green (5-HG) for the Pacific Theatre. The two side gangways are 28 feet (8.5 M) long and were deployed by cables suspended by the cross bow I-beam. (Floating Drydock)



Bow Ramp Development

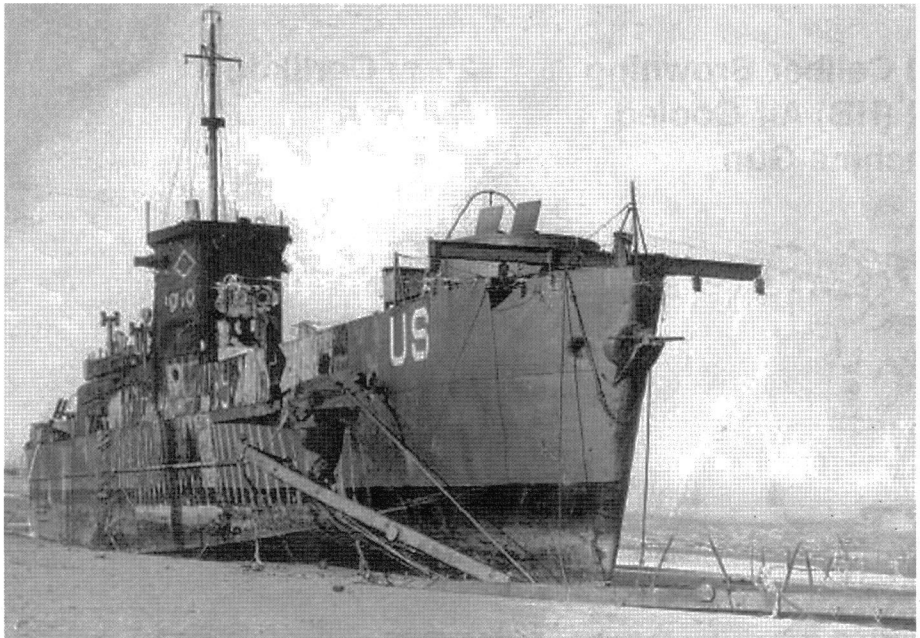


US troops disembark from an LCI (L) at Omaha Beach during the Normandy Invasion on 6 June 1944. The men walked from the troop compartment to either of the side ramps and down the ramps onto the beach. The side ramp type of LCI (L) had a crew of four officers and 20 men. It had a capacity of 185 troops and a range of 8700 miles (14,000.9 KM). (Real War Photos)

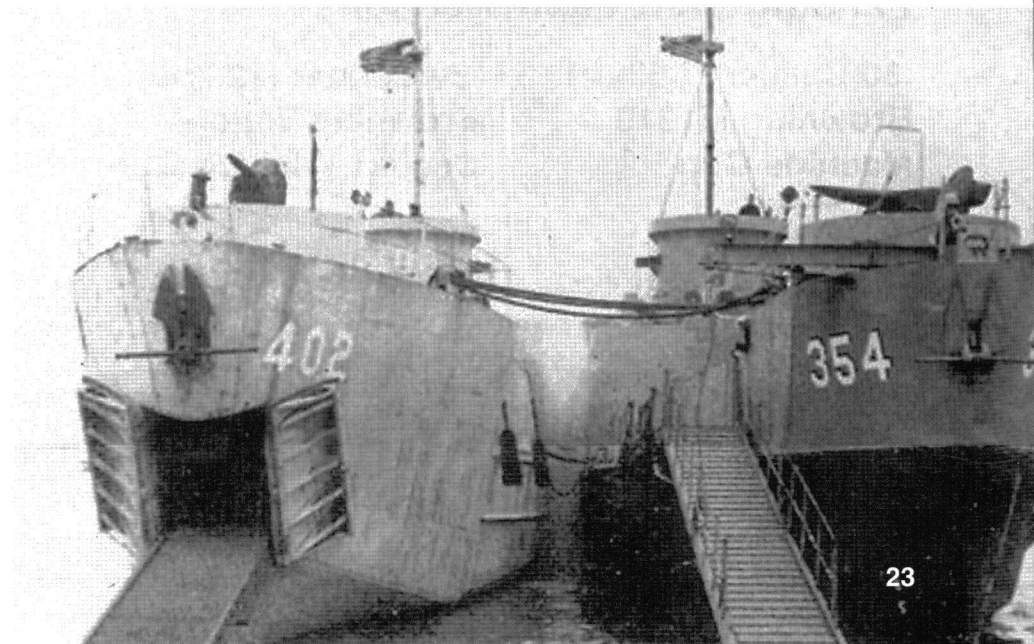


LCI (L)-553 lands US Army troops onto Omaha Beach on the morning of 6 June 1944. This LCI later took a direct hit by a German coast gun and was left wrecked on the beach. The white diamond symbol on the hull identified US ships and landing craft. The LCI is camouflaged in Navy Blue (5-N) for the invasion of France. (Real War Photos)

LCI (L)-83 is beached at Normandy after contacting a German mine on 6 June 1944. The crew repaired the hole in its side on the beach. When the tide raised, the craft floated free to sail back to England for permanent repairs. Wartime censors removed the hull number from the photo negative so as not to divulge the damaged craft's identity. (USCG)



LCI (L)-402 and LCI (L)-354 demonstrate the two types of ramp styles employed by the landing craft. The former vessel is of the centerline ramp type and the latter is of the side ramp type. The centerline ramp type afforded some protection to the assault troops when landing. LCI (L)-402 is camouflaged in Ocean Gray (5-0) and 354 has Measure 22, the Graded System that used Navy Blue (5-N) and Haze Gray (5-H). (National Archives)

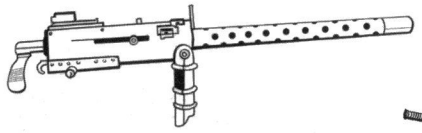


A gunner loader places a 20-round drum of ammunition on a 20MM Oerlikon cannon aboard LCI (L)-708 off of Iwo Jima in February of 1945. This Swiss-designed weapon was built under license in the US for light anti-aircraft use during World War Two. It replaced the .50 caliber (12.7MM) Browning water-cooled machine gun, which was too light to be effective against aircraft. The 20MM cannon had a muzzle velocity of 2750 feet (838.2 M) per second, a range of 4800 yards (4389.1 M), and a ceiling of 10,000 feet (3048 M). This weapon's firing rate ranged from 465 to 480 rounds per minute. Gunners used the numbers inside the gun tub to initially train their weapons from directions given to them by the gun director. The gun crew is wearing M1 steel helmets and life preservers. (Real War Photos)

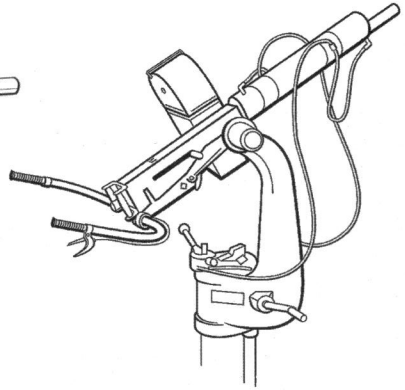
The .30 caliber (7.62MM) Browning M1919 air-cooled machine gun was commonly carried on US landing craft during World War Two. The M1919 had a muzzle velocity of 2800 feet (853.4 M) per second, an effective range of 1100 yards (1005.8 M), and a firing rate of 400 to 550 rounds per minute. This installation was found on an LCVP, but was similar to those on LCI (L)s. Steel shields fitted to the gun mount provided some protection to the gunner. These shields were also mounted on .50 caliber machine guns and 20MM cannon. (USN)

Landing Craft Light Weapons

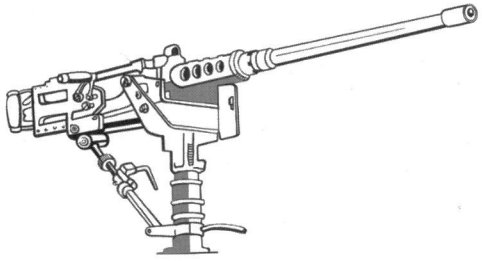
.30 Caliber (7.62MM) Browning M1919 Machine Gun



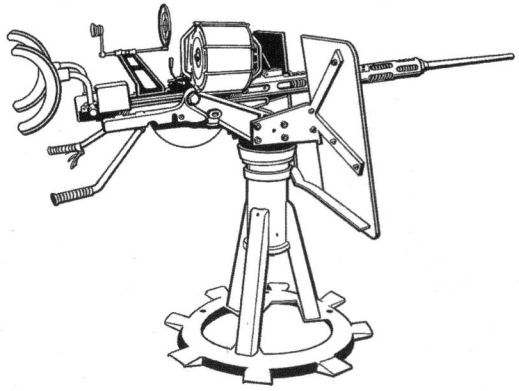
.50 Caliber (12.7MM) Browning Water-Cooled Machine Gun



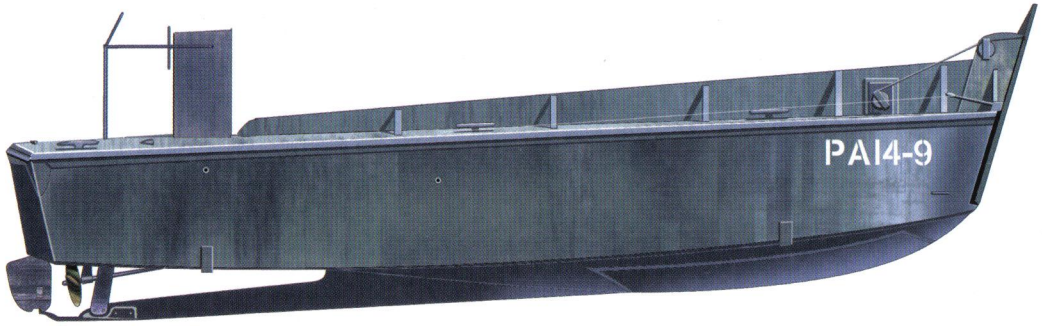
.50 Caliber Browning M2 (HB) Air-Cooled Machine Gun



20MM Oerlikon Cannon

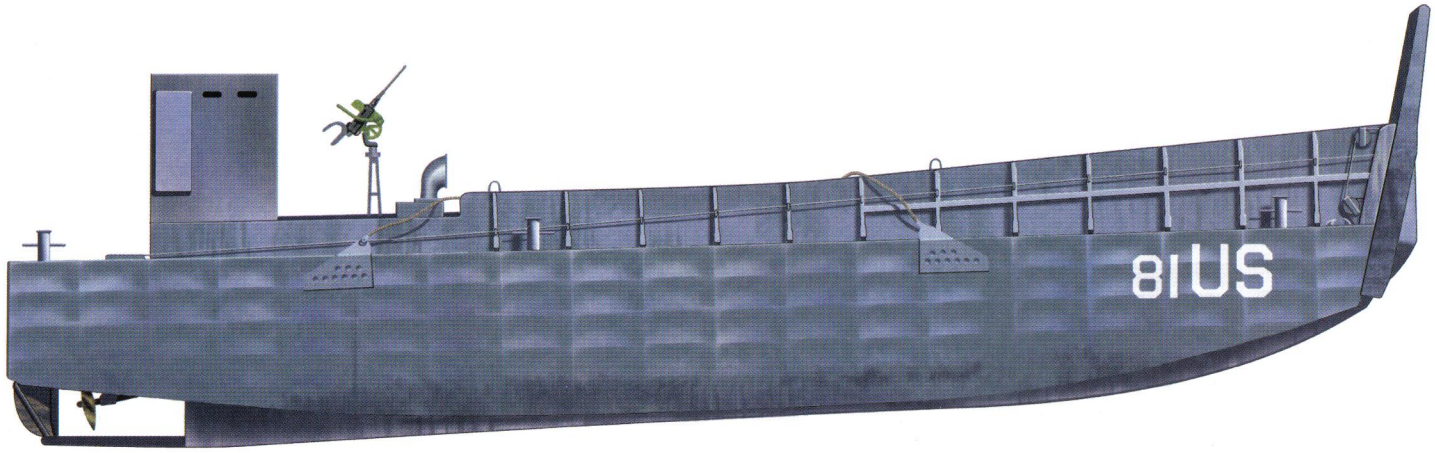


This LCP (R) (PA16-14) was assigned to the attack transport USS J. FRANKLIN BELL (APA-16). It was used to land US troops during the invasion of Attu in the Aleutian Islands on 11 May 1943. The landing craft is painted in the Measure 21 scheme, which consisted of Navy Blue (5-N; approximately FS35044),



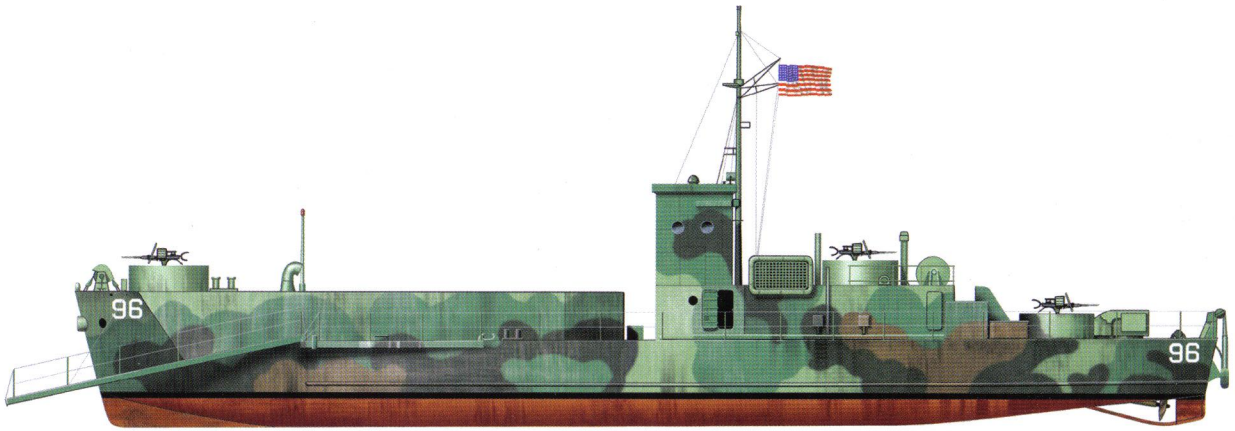
PA14-9 was an LCV assigned to the attack transport USS HUNTER LIGGETT (APA-14). This craft helped land US Marines at Bougainville in the Solomon Islands on 1 November 1943.

One of the many LCVPs employed on Operation OVERLORD was PA13-22, from the attack transport USS JOSEPH T. DICKMAN (APA-13). This 'Higgins Boat' was painted Ocean Gray (5-O; approximately FS35164) for the invasion of Normandy, France on 6 June 1944.

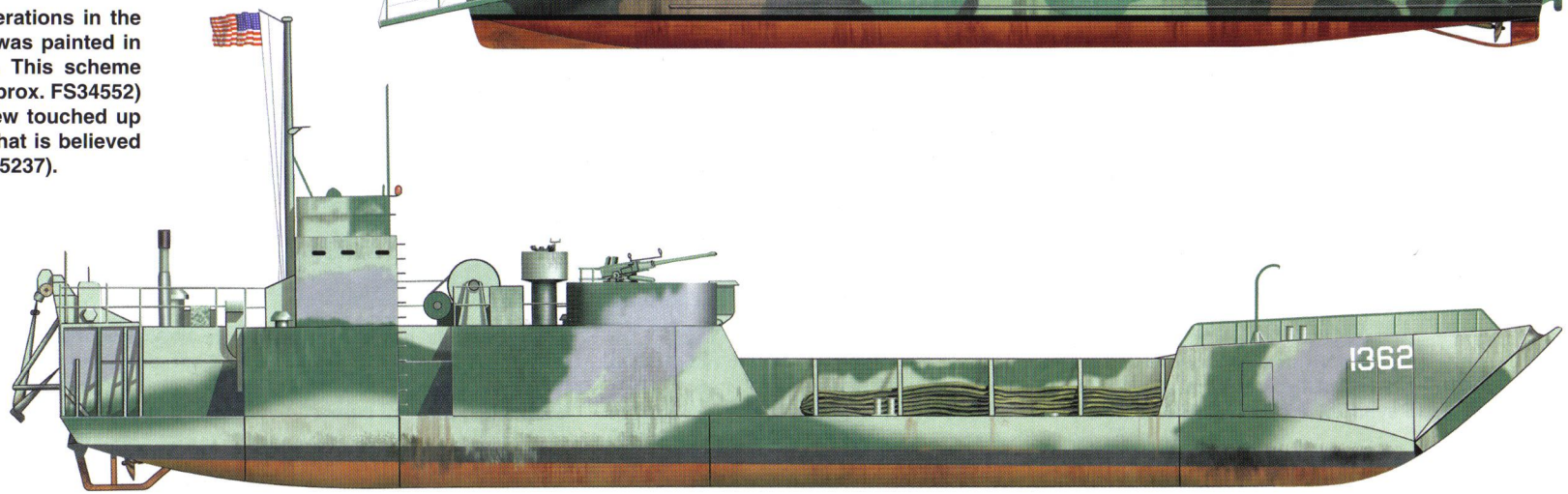


This LCM (3) (81 US) was employed for the Normandy Invasion on 6 June 1944. The US on the bow distinguished an American landing craft from British vessels, which had UK painted on the bow.

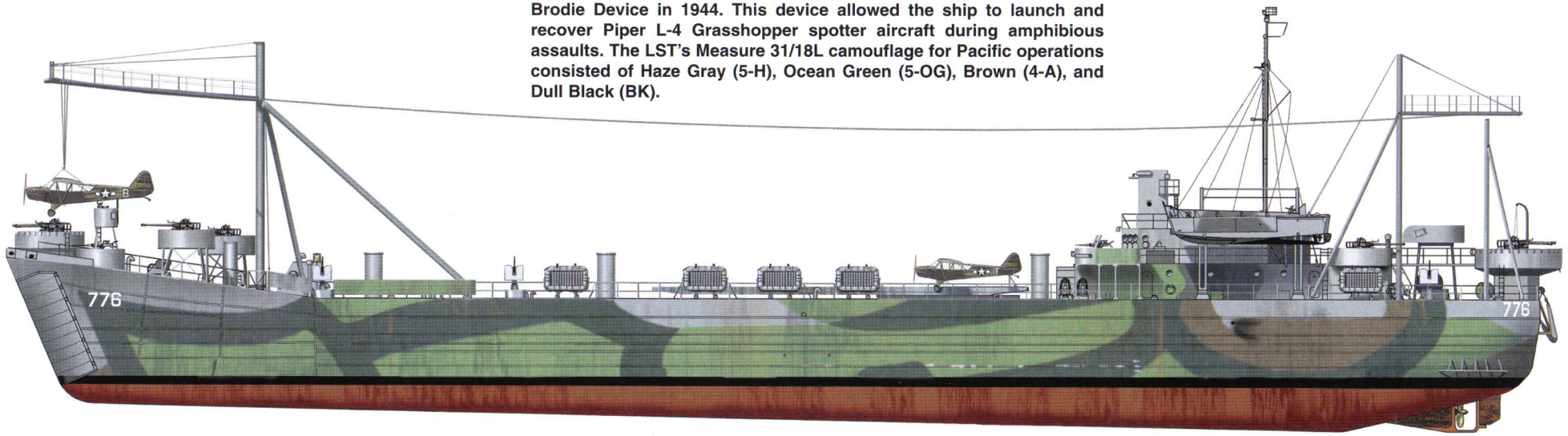
LCI (L)-96 was employed during the invasion of Iwo Jima on 19 February 1945. This early Landing Craft, Infantry (Large) discharged the troops through two ramps flanking its bow. The vessel is painted in the Measure 31/6L scheme for Pacific operations. This measure consisted of Haze Green (5-HG; approximately FS34300), Ocean Green (5-OG; approx. FS34227), Navy Green (5-NG; approx. FS34128), Brown (4-A; approx. FS30257), and Dull Black (BK; approx. FS37040).



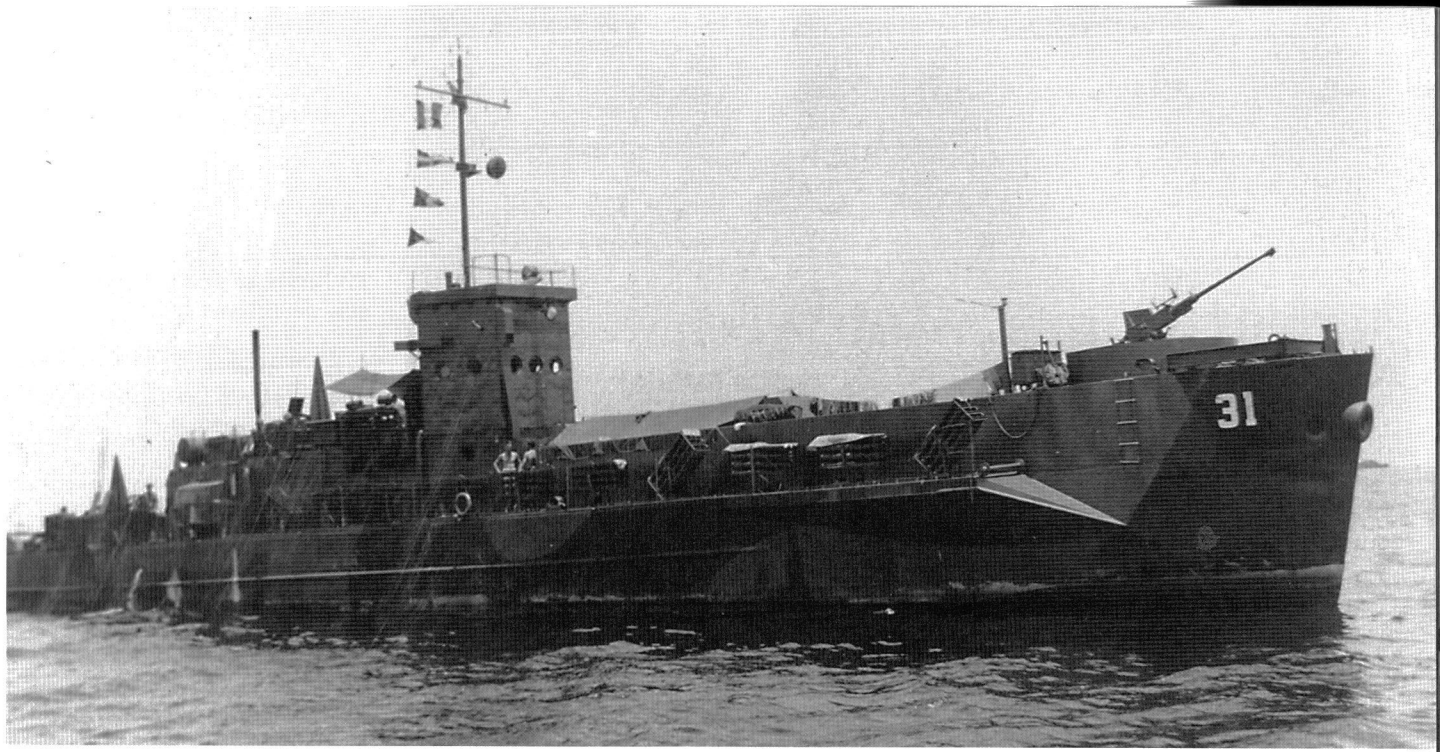
Among the LCTs assigned to operations in the Pacific Theatre was LCT-1362. It was painted in Measure 33/12L in April of 1944. This scheme consisted of Pale Green (5-PG; approx. FS34552) and Ocean Green (5-OG). The crew touched up parts of the starboard hull with what is believed to be Haze Gray (5-H; approx. FS35237).



LST-776 was one of several Landing Ships, Tank equipped with the Brodie Device in 1944. This device allowed the ship to launch and recover Piper L-4 Grasshopper spotter aircraft during amphibious assaults. The LST's Measure 31/18L camouflage for Pacific operations consisted of Haze Gray (5-H), Ocean Green (5-OG), Brown (4-A), and Dull Black (BK).

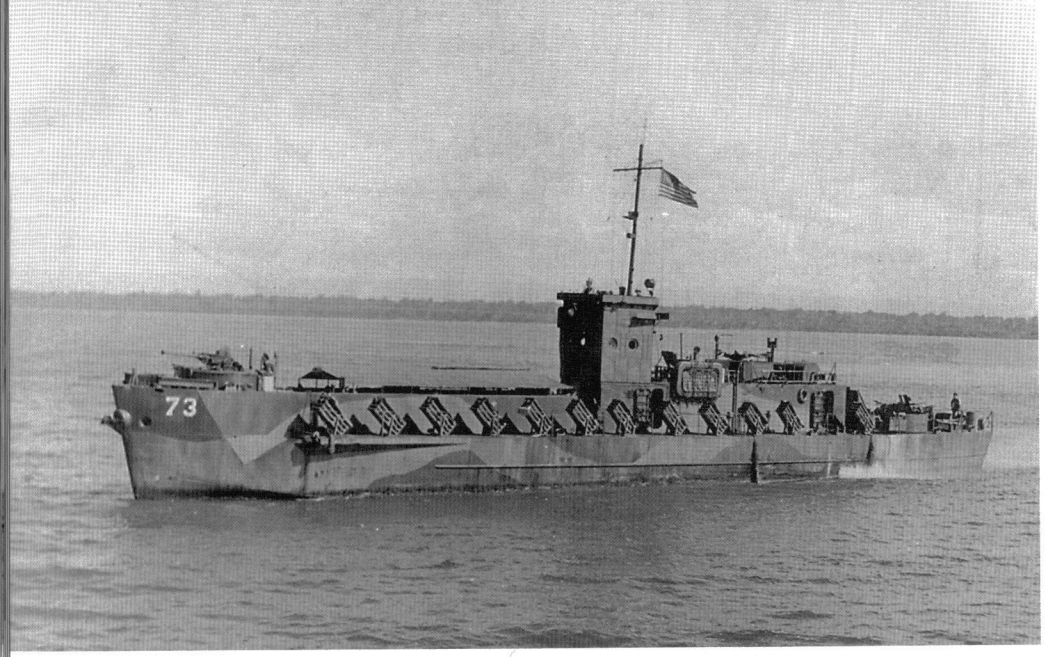


LCI (G)-31 was a Type F Gunboat converted from a LCI (L) side ramp type craft. Twenty four Mk 7 rocket launchers – 12 launchers per side – were mounted on this vessel. Each Mk 7 launched one 5 inch (12.7 CM) rocket, which was normally launched from an aircraft. The LCI (G) was also armed with a single 40MM Bofors cannon in the bow position and three 20MM cannon. The Swedish-designed, US license-built 40MM cannon had a firing rate of 160 rounds per minute and was supplied by four-round clips. Its muzzle velocity was 2890 feet (880.9 M) per second, while its range was 11,000 yards (10,058.4 M) and its ceiling was 22,800 feet (6949.4 M). The LCI (G) provided fire support to the landing troops. Troop spaces inside the craft were converted to magazine spaces for the rockets. (Real War Photos)



A gun crew on LCI (G)-442 fires their port 40MM single barrel cannon at a Japanese machine gun position on the beach at Nasugbu, the Philippines on 31 January 1945. This weapon used a modified 'Army type' installation normally used on land. Just below the 40MM position is a 20MM gun station, while a rocket launcher is located forward of the 20MM position. (Real War Photos)

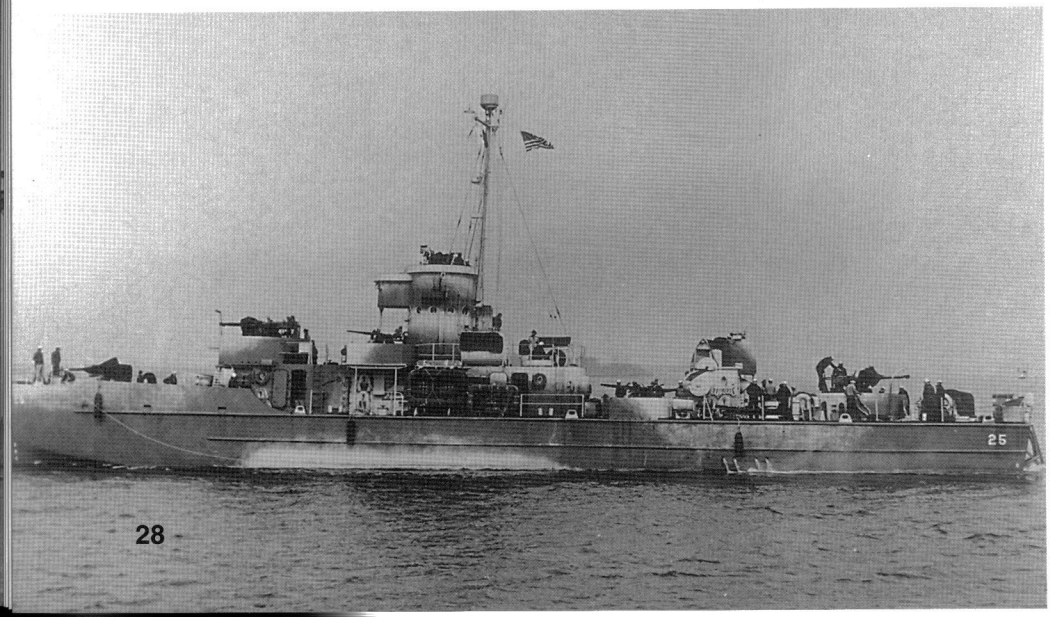
LCI (R)-338 launches a volley of 5 inch rockets on Balikpapan Beach, Borneo on 1 July 1945. Units of the Seventh Fleet fired over 10,000 rockets in support of Australian forces when they landed during 'F Day.' The forward manned 40MM position must have been an interesting place to be when the rockets lifted off. (Real War Photos)



The 12 port rocket launchers are mounted on the deck of LCI (R)-73 from the 7th Amphibious Force in the Pacific. A single 'Army Type' 40MM cannon is fitted to the forward gun position. Three 20MM cannon are situated on the upper after deck and stern. This LCI (R) is camouflaged in a Measure 31 scheme consisting of Outside Greens 1, 2, and 3. (Real War Photos)

LCI (L)-644 was converted to a Gunboat and redesignated LCI (G)-644. The conversion consisted of the additional rocket launchers and one additional 20MM cannon. This LCI (G) supported the invasion of Okinawa in April of 1945. The camouflage scheme was a well-worn Tropical Measure. In the background are LCI (L)-1028 and the battleship USS TENNESSEE (BB-43). (Real War Photos)

The Landing Craft Support (Large) Mk 3 was a further improvement on the LCI (G). The LCS (L) (3) was armed with four 40MM cannon and two 20MM cannon. The increased firepower was designed to protect the landing forces as they approached the beach. LCS (L)-25 is camouflaged in Measure 33/14L and the signal mast is fitted with SU surface search radar. (Real War Photos)



LCS (L)-29 featured an increased armament over earlier LCS (L) vessels. This craft was armed with a single 3 inch (7.6 CM)/50 caliber gun, a pair of twin 40MM cannon, and six 20MM cannon. These weapons brought additional firepower to the landing forces. The LCS (L) is camouflaged in the 'false ship' scheme of a Navy Blue (5-N) ship's silhouette on a Haze Gray (5-H) hull side. (Real War Photos)

Landing Ship, Medium and Landing Ship, Medium (Rocket)

The Landing Ship, Medium (LSM) was devised by combining elements of a Landing Craft, Tank Mark Six (LCT 6) and a Landing Ship Tank (LST). It was originally designated the LCT (7) until renamed the LSM. This vessel was designed to be an ocean-going tank landing ship able to operate with convoys of LCI (L)s.

The LSM carried up to five medium or three heavy tanks or six Landing Vehicle, Tracked (LVT) amphibious tractors. The latter were also called Alligators. This vessel could also carry nine DUKWs ('Ducks,' 6x6 amphibian trucks) or a combination of vehicles and cargo up to a maximum of 165 tons (149.7 MT). The LSM was operated by a crew of two officers and 46 men.

The LSM's length was 203 feet 6 inches (62 M) and its beam was 34 feet 6 inches (10.5 M). The cargo well ran the full length of the ship and it had a maximum width of 26 feet (7.9 M). Its displacement was rated at 1095 tons (993.4 MT) loaded, 743 tons (674 MT) for landing, and 520 tons (471.7 MT) light. The draft was 6 feet 4 inches (1.9 M) forward and 8 feet 6 inches (2.6 M) aft when loaded.

This ship was armed with either a single or twin 40MM Bofors cannon mount on the bow carryover structure and four 20MM Oerlikon cannon situated on the deck. Additional .50 caliber (12.7MM) Browning M2 (HB) machine guns were added to the bow area to increase suppressing fire during landings. Ten pound (4.5 KG) STS armor was added to gun mount areas, the pilothouse, and the conning tower to protect the crew.

LSMs were powered by either two Fairbanks-Morse reversible hydraulic clutch diesels or two General Motors non-reversing diesels with an air-flex clutch. Each engine combination provided a total of 2800 HP to the twin screws. The maximum speed was rated at 13.2 knots (15.2 MPH/24.5 KMH) at a displacement of 928 tons (841.9 MT). Its endurance was 4900 miles (7885.6 KM) at 12 knots (13.8 MPH/22.2 KMH) and 928 tons displacement.

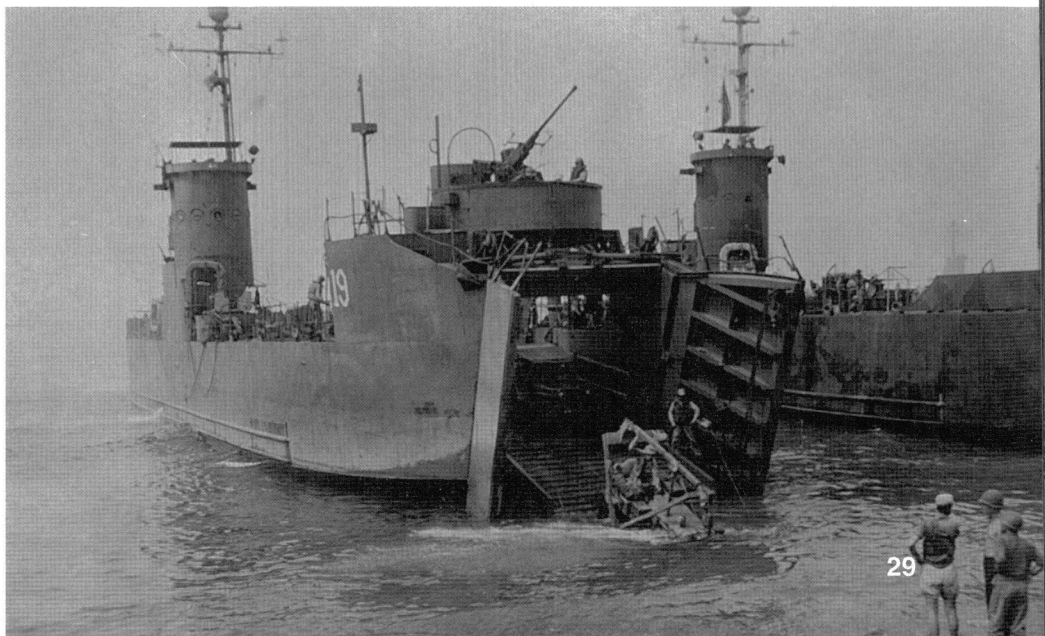
To further increase suppressing fire at the landing beach, 12 LSMs were converted into **Landing Ship Medium (Rocket)** or **LSM (R)** vessels. These served as rocket support ships for amphibious operation and to clear the beach with direct fire support and rocket barrages prior to landings.

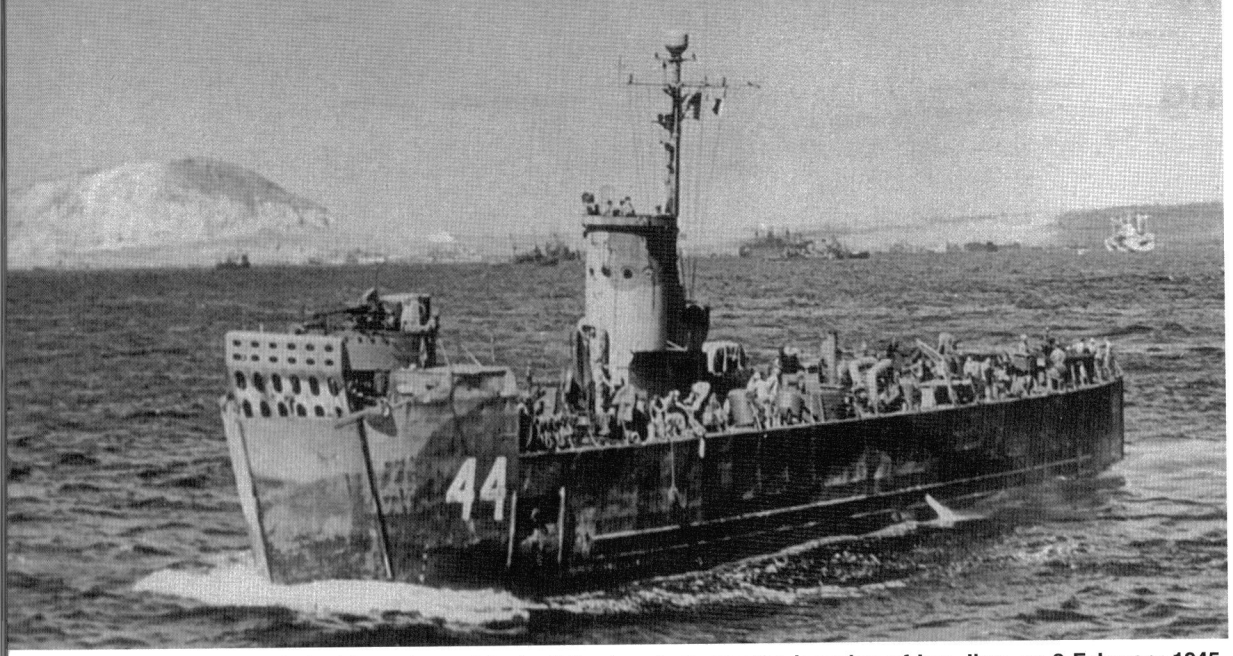
The conversion from LSM to LSM (R) included decking over the tank well. This converted the well into rocket assembly rooms and magazines for the 5 inch (127MM) rockets and 5 inch gun ammunition. The LSM-188 through 195 Class was armed with a single 5 inch/38 caliber gun in an enclosed mount on the armored aft deck. This weapon primarily protected the ship from aircraft attack. It also had two 40MM cannon (one on the bow deck superstructure and one just forward of the offset pilothouse), plus four 20MM cannon. The rocket armament consisted of 75 four-rail Mk 36 and 30 six-rail Mk 30 rocket launchers. The rails were of a design used on US Navy aircraft. The LSM (R)'s displacement was rated at 605 tons (548.9 MT) light and 968 tons (878.2 MT) fully loaded.

The LSM-196 through 199 Class was armed with a single 5 inch/38 caliber dual-purpose enclosed gun situated on the aft deck, a single 40MM cannon, three 20MM cannon, plus eighty-five Mk 51 automatic hopper type 5 inch rocket launchers. Displacement was rated at 588 tons (533.4 MT) light and 1008 tons (914.5 MT) fully loaded. Both classes had a maximum speed of 13.2 knots (15.2 MPH/24.5 KMH) and an endurance of 4900 miles (7885.6 KM) at 12 knots (13.8 MPH/22.2 KMH).

Two Landing Ships, Medium – LSM-18 and LSM-51 – unload their cargo on the beach at Ormoc Bay, the Philippines on 7 December 1944. LSM-18 is camouflaged in Measure 31/17L and LSM-51 in Measure 31/15T. The latter scheme consisted of Ocean Green (5-OG) and Navy Green (5-NG). The LSM could carry five medium or heavy tanks or 165 tons (149.7 MT) of cargo. (Real War Photos)

A US Army crawler tractor drives out of the bow doors of LSM-19 onto the beach at Zamboanga, the Philippines on 1 April 1945. US yards built over 550 LSMs during 1944-45. This vessel is believed to be camouflaged in a Tropical Green scheme for operations in the Southwest Pacific. (Real War Photos)





LSM-44 is loaded with equipment just off the beach during the invasion of Iwo Jima on 3 February 1945. Mount Suribachi, on the island's southern end, rises just above the LSM's bow. The signal mast is fitted with an SL radar antenna. Her camouflage paint is severely weathered by long-term exposure to the ocean waters. (Real War Photos)

A further refinement of the LSM (R) was the LSM (R)-401 Class. This incorporated only the outside hull and propulsion of the standard LSM design with an entirely new deck, armament and superstructure configuration. The steering section superstructure – which included the chart room, gun and rocket directors – was moved to the after deck area and the 5 inch/38 caliber enclosed mount was placed just forward of the steering section. Armament also included four twin mount 20MM cannon, two twin 40MM cannon, and up to six 4.2 inch (107MM) chemical mortars. Four of the mortars were fitted to trainable mounts amidships, while one each was mounted fore and aft. Ten continuous firing automatic 5 inch rocket launchers were fitted to the main deck. The 5 inch gun was provided with a Mk 52 radar controlled gun director and the 40MM cannon with a Mk 51 optical gun director.

The LSM (R)-401 Class consisted of the LSM (R)-401 through 412 and LSM (R)-501 through 536, a total of 48 ships being constructed. All LSM (R)s were utilized in the Pacific War Zone to provide fire support for the landing forces during the 'Island Hopping' Campaign from 1944 to 1945.

Six LSMs (LSM-12, 20, 59, 135, 149, and 318) were lost during World War Two. Three LSM (R)s were sunk during the Battle of Okinawa. LSM (R)-195 was sunk by a Japanese *kamikaze* ('Divine Wind' suicide attack aircraft) on 3 May 1945 and the same fate befell LSM (R)-190 and LSM (R)-194 the next day.

The landing beach at Iwo Jima is littered with wrecked landing craft as LSM-48 lands its cargo. This LSM is camouflaged in Measure 31/20L, which consisted of Outside Greens 2 and 3 and Dull Black. A Landing Craft, Tank (LCT) and a Landing Vehicle, Tracked (LVT) share the beach with the LSM. LSMs were initially armed with a single 40MM Bofors cannon and four 20MM Oerlikon cannon. (Real War Photos)

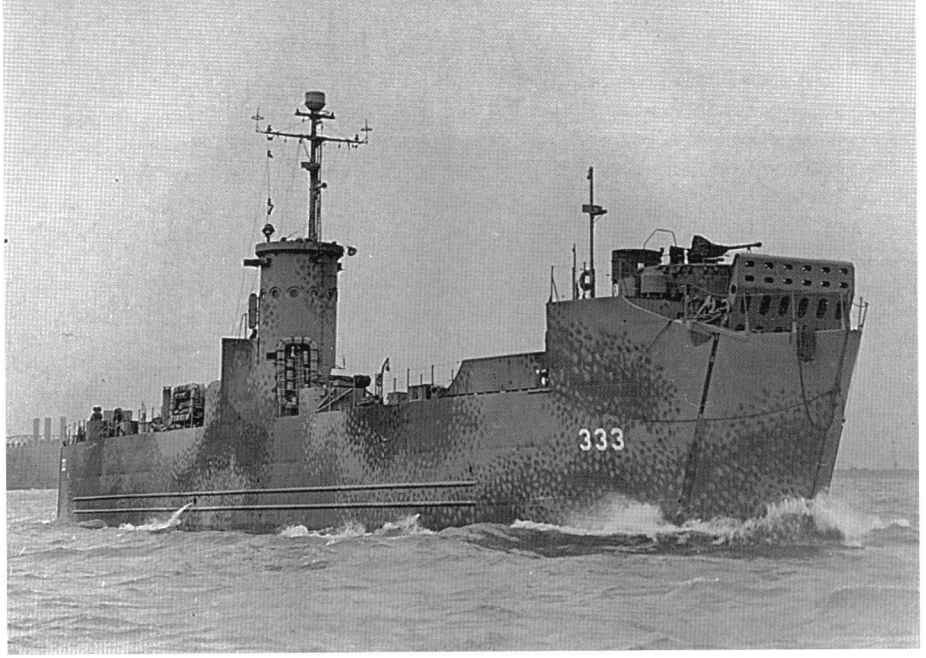
US Marines in jeeps and scout cars move up the side of the beach at Iwo Jima after offloading from LSM-92. The ship is camouflaged in Measure 31/20L. The invasion fleet standing just off the beach brings in men and materials necessary for the island's occupation. (Real War Photos)

A US Army M29 Weasel tracked cargo carrier offloads from LSM-138 at the beachhead at Zamboanga, the Philippines on 1 April 1945. LSM-138 was painted on the bulkhead above the bow ramp for identification purposes. A water-cooled .50 caliber (12.7MM) Browning machine gun was added to the bow to help suppress Japanese fire from the beach. (Real War Photos)

A recently completed LSM-233 displays yet another variation of the Measure 31 Tropical camouflage scheme in July of 1944. The LSM's deck well was 203 feet 6 inches (62 M) long and 26 feet (7.9 M) at its widest point. The vessel displaced 1095 tons (993.4 MT) at full war load. (Real War Photos)

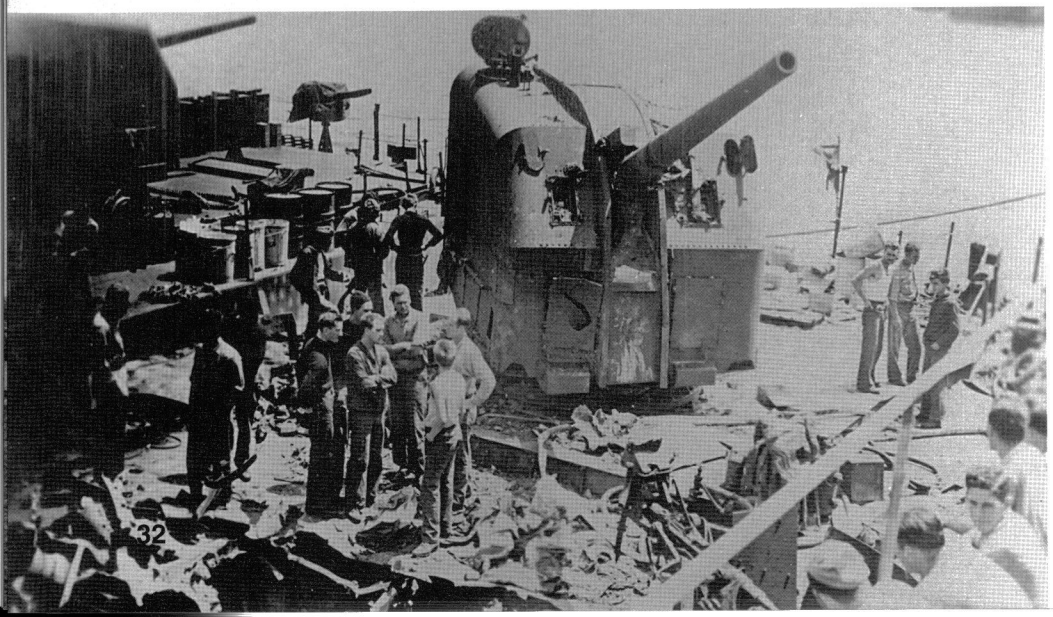
An M4 Sherman tank drives out of LSM-201's bow doors during a practice at Camp Bradford, Virginia on 11 May 1944. The signal mast is fitted with an SL surface search radar, flanked by Identification Friend/Foe (IFF) antennas. IFF electronically interrogated aircraft for a coded signal, which determined whether it was a friendly or enemy aircraft. This vessel appears to be camouflaged in Measure 21, the Navy Blue (5-N) System. (Real War Photos)

A crawler tractor rolls from the bow doors of LSM-257 at Zamboanga, the Philippines on 10 March 1945. The bow-mounted bandstands are fitted with a pair of 20MM Oerlikon cannon, which suppressed Japanese gunfire. Another haze or smoke enshrouded LSM has just beached and will soon land its cargo. (Real War Photos)

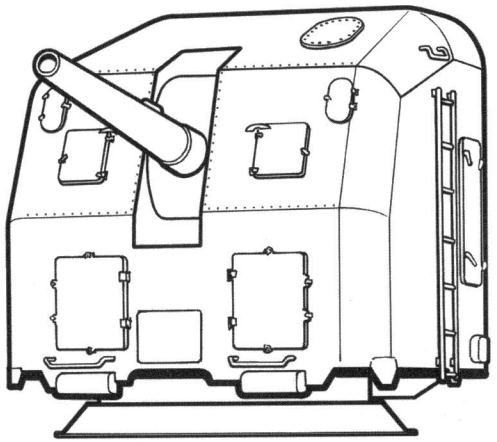


A recently competed LSM-333 displays its camouflage Measure 31/17L Tropical Scheme in 1944. The signal mast is fitted with SL surface search radar and IFF antennas. The bow carryover bandstand's armored tub is fitted with a single barrel 40MM cannon. (Real War Photos)

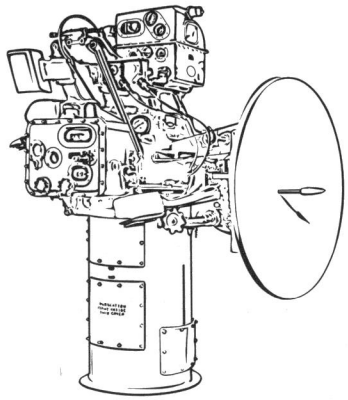
Crewmen aboard LSM (R)-188 survey deck damage just forward of her 5 inch (12.7 CM)/38 caliber gun. A Japanese bomb off Okinawa caused this damage on 29 March 1945. Fortunately, the 5 inch ammunition did not explode when the bomb hit the vessel. LSM (R)-188 is berthed between the repair ship USS EGERIA (ARL-8) to port and another LSM (R) to starboard. A 4.2 inch (107MM) mortar is mounted on the fantail of the second LSM (R). (Real War Photos)

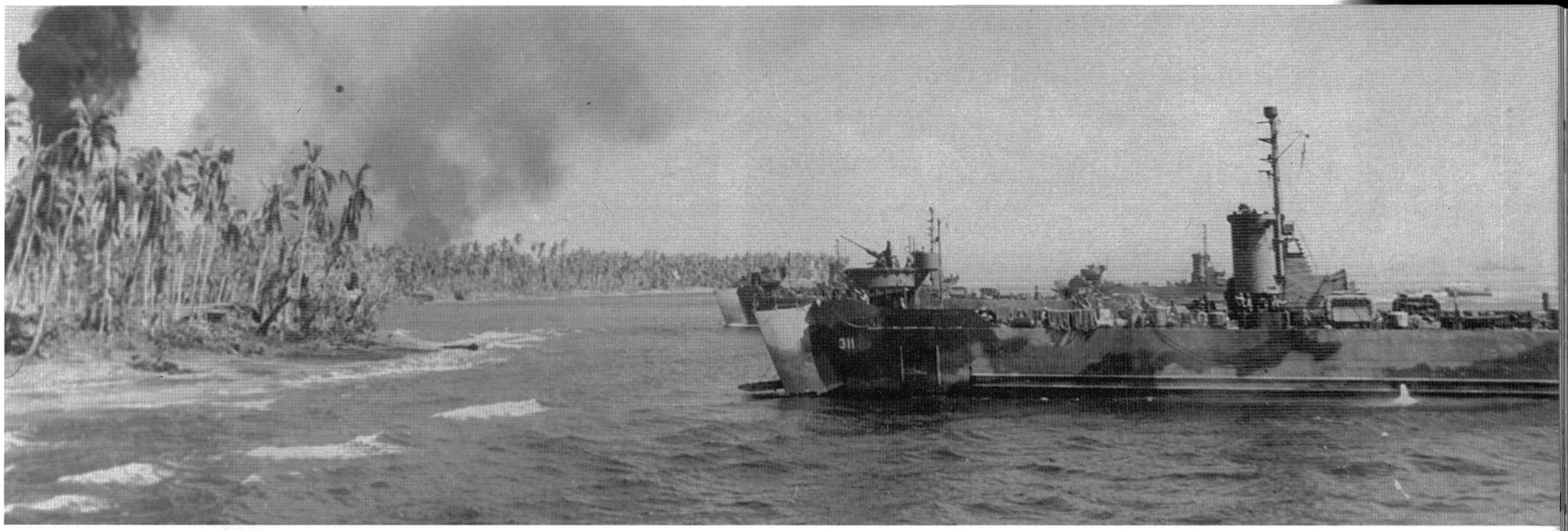


5 Inch (12.7 CM)/38 Caliber Enclosed Mount Mk 30 Mod 69



Mk 52 Gun Director

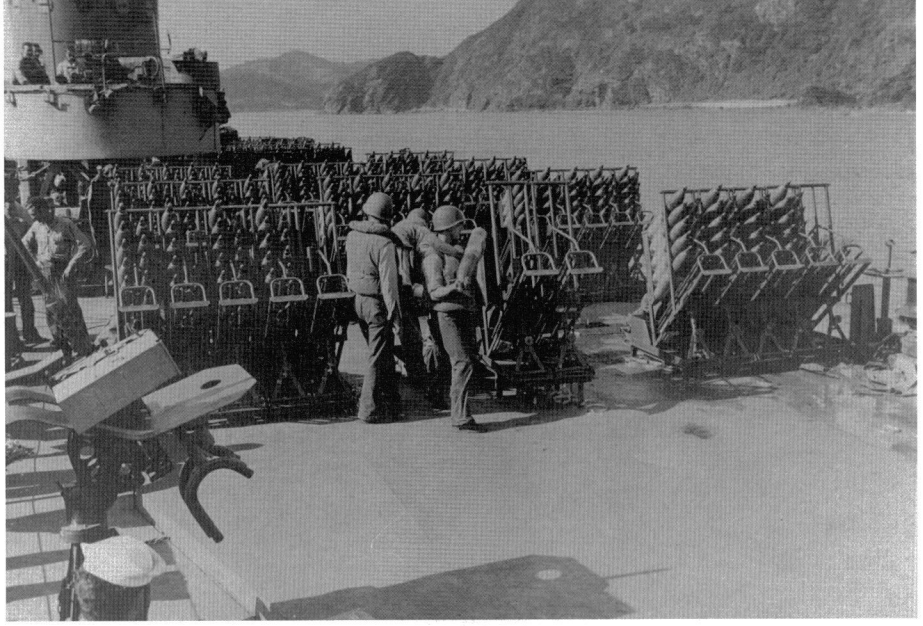




(Above) LSM-311 and other LSMs approach the beach at the Japanese-held island of Leyte, the Philippines on 20 October 1944. American forces referred to this date as Assault Day (A-Day). LSM-311 is camouflaged in a Measure 31 Tropical Green scheme designed for the Pacific Theatre. This scheme consisted of Outside Green 1 (approximately FS34227), outside Green 2 (approximately FS34108), and Outside Green 3 (approximately FS34092). The LSM is armed with a single 40MM cannon on the front bandstand and four 20MM cannon further aft. (Real War Photos)

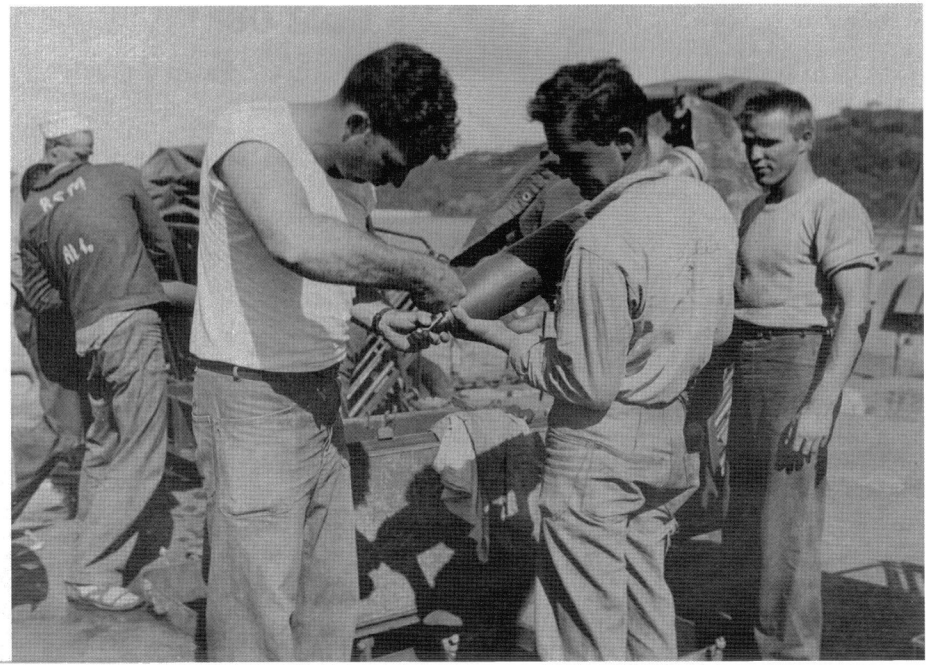
(Right) The wharf at Naval Operating Base (NOB) Guam is used to store 40MM cannon being removed from landing craft following the end of the Pacific War. LSM-348 and LSM-232 soon had their twin mount 40MM cannon removed from their bow bandstands prior to the ships' scrapping. Mk 52 gun directors are fitted to the back of the bow-mounted bandstand. Tarpaulins cover the directors, which provided tracking data to the guns. (Real War Photos)

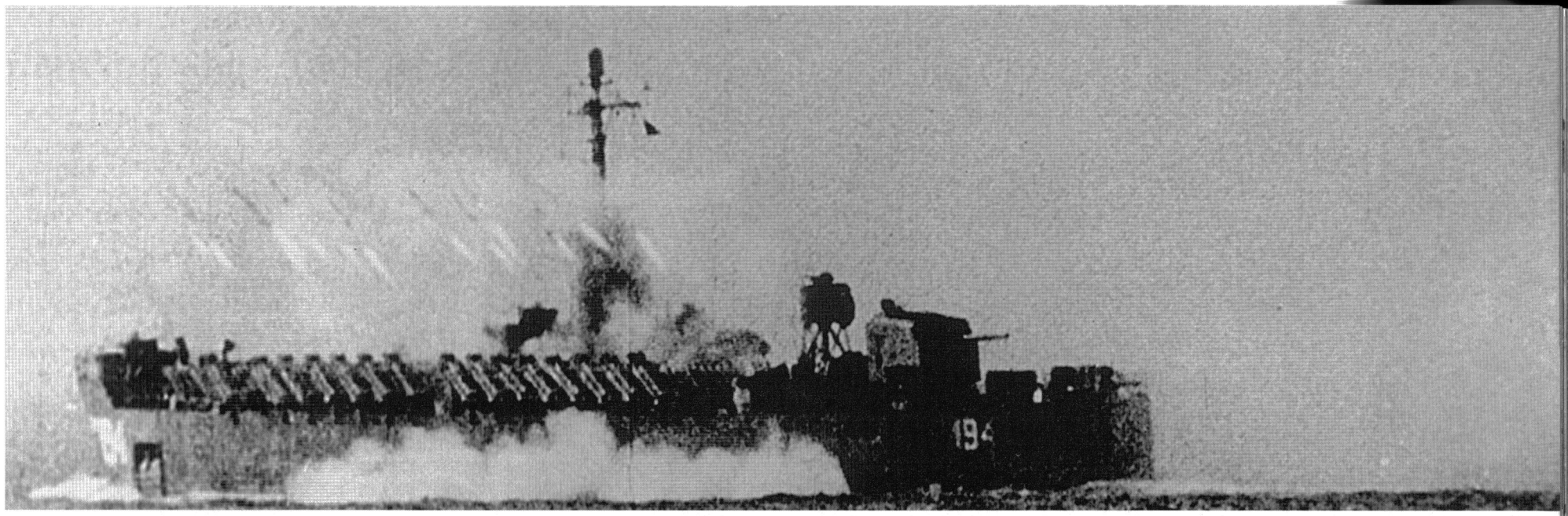
An armorer carefully loads a fused 5 inch (12.7 CM) rocket projectile into a rack aboard LSM (R)-196 in 1945. The LSM's well deck was converted to a magazine for the rocket projectiles. LSM (R)-196 was armed with 85 rocket launchers and one enclosed 5 inch/38 caliber dual-purpose (anti-aircraft and anti-surface) mount. (Real War Photos)



Armorers load 5 inch rocket projectiles into the deck-mounted racks on LSM (R)-196 prior to the bombardment of Tokishiki Shima in 1945. The rockets were aimed by adjusting the rocket racks' angle and the ship's angle and distance from the target. An air-cooled .50 caliber (12.7MM) Browning M2 (HB) machine gun with a shield is mounted on a stand on the starboard side of the deck. (Real War Photos)

A fuse is attached to the nose of a 5 inch rocket projectile aboard LSM (R)-196 in 1945. The projectiles were passed up from the magazine through hatches located near the rocket racks and then fused. Each Mk 51 rocket launcher threw out its ten 5 inch projectiles in five seconds. (Real War Photos)





(Above) LSM (R)-194 fires off a volley of 5 inch rocket projectiles toward a Japanese-held beach in the Pacific. The projectiles had a range of from two to three miles (3.2 to 4.8 KM), depending on the launchers' firing angle. This range allowed the LSM (R) to stand off from the assault beach. These rocket armed vessels greatly increased the attacking fleet's firepower. This LSM (R) lacks the 4.2 inch (107MM) M2 chemical mortar mounted on the fantail of other such vessels. (Real War Photos)

(Right) Three LSM (R)s – (from bottom) LSM (R)-196, LSM (R)-198, and LSM (R)-199 – let loose a barrage of 5-inch projectiles toward a target located on the shores of Tokishiki Shima in March of 1945. LSM (R)-198 is camouflaged in the Tropical Measure 31/17L designed for the Pacific Theatre while the other two were painted in Measure 31/6L. (Real War Photos)

LSM (R)-196 is painted in the Tropical Camouflage scheme of Measure 31/17L in 1945. The Mk 52 gun director for the 5 inch/38 gun is located in an elevated bandstand on the after deck. Her twin 40MM Bofors cannon were mounted in an armored tub on the bow and in a position just forward of the bridge area. The signal mast is fitted with an SU surface search radar antenna. Mk 51 5 inch automatic rocket launchers are located on the forward deck. Mk 51 launchers were auto-loading and capable of sustained fire until their racks were empty. (Real War Photos)

LSM (R)-193 comes up alongside Landing Craft Infantry (Flotilla Flagship)-535 off Okinawa to receive some mail on 1 April 1945. The LSM (R)s 188 through 195 were armed with 75 aircraft type four rail Mk 36 and 30 six-rail Mk 30 rocket launchers, plus a single enclosed 5-inch dual-purpose mount. (Real War Photos)

LSM-401 was converted into a Bombardment Ship by moving the enclosed 5 inch/38 caliber mount forward of the bridge superstructure. It was armed with ten continuous loading launchers for 5 inch Spin Stabilized (SS) rockets, a pair of twin 40MM cannon (one on the bow and one on the stern), four 20MM cannon, and four trainable 4.2 inch (107MM) mortars. This vessel – the class leader – is camouflaged in Measure 31/6L. (Floating Dry Dock)

Landing Ship, Tank and Conversions

The Landing Ship, Tank (LST) was perhaps the best known of all the landing craft and ships utilized during World War Two. The LST became known by all that sailed her as a 'Large Slow Target.' She was large at 328 feet (100 M) long, slow at 9 knots (10.4 MPH/16.7 KMH), and a large target with over 40 being lost during the war.

The LST design resulted from a 1941 British Admiralty request for a ship that could carry multiple tanks from the United States. US factories were building over 100 tanks a day for Britain at the time. This vessel would carry these tanks across the ocean and land them on a foreign beach ready to fight. The ship would have to be built in the US, as British shipyards were at maximum capacity and under German air attacks on a regular basis. The Gibbs & Cox design was finalized and production began at various coastal and inland shipyards in November of 1941.

The basic LST was 328 feet in overall length, with a beam of 50 feet (15.2 M). Its draft was 8 feet 2 inches (2.5 M) forward and 14 feet 1 inch (4.3 M) aft while at its seagoing displacement of 4080 tons (3701.4 MT). In a landing displacement of 2663 tons (2415.9 MT), its draft was 3 feet 10 inches (1.2 M) forward and 9 feet 9 inches (3 M) aft. To achieve the 3 feet 10 inch forward draft, most of the water ballast was pumped aft to lighten the bow area. In a light displacement of 1625 tons (1474.2 MT), a forward draft of just over two feet (0.6 M) could be achieved. A maximum of 2100 tons (1905.1 MT) could be carried in the tank deck well, along with weather deck cargo.

This tank deck had a total internal capacity of 92,765 cubic feet (2626.8 M^3). It measured 258 feet (78.6 M) long, 30 feet (9.1 M) wide, and 11 feet (3.4 M) high. The tank deck was wide enough that tanks and trucks could load one or two rows straight in before the last of the vehicles had to be backed in. An elevator loaded and unloaded cargo on the weather deck on LST-1 through LST-512. A ramp was employed on subsequent LSTs, with the exception of LST-531. A 30 foot (9.1 M) by 16 foot (4.9 M) cargo hatch was placed just forward the bridge area to handle cargo and outsize goods.

LSTs were powered by two 900 HP General Motors or Fairbanks-Morse diesel engines. Twin screws enabled the ship to achieve a maximum speed of 9 knots when fully loaded. A speed of 12 knots (13.8 MPH/22.2 KMH) was possible in the lightest of conditions. Endurance was rated at 6000 miles (9655.8 KM) at 9 knots when fully loaded, and over 24,000 miles (38,623.2 KM) in light condition and utilizing most of the 1060 tons (961.6 MT) of diesel fuel.

There were two LST classes built during the war: LST-1 through -541 and LST-542 through -1152. The later ships had a slightly less payload than the earlier class. LST-1153 was produced with a steam power plant, but was completed too late to see any action in World War Two. The LST was also designed to carry one fully assembled Landing Craft Tank (LCT Mk 5 or Mk 6) lashed down on the weather deck. Listing the LST to either port or starboard by pumping ballast launched LCTs. Disassembled LCTs could also be loaded into the tank deck via the cargo hatches and elevator.

The LSTs were armed with a variety of weapons, depending on the time frame and availability, seemingly with no standard practice. The armament was normally two 40MM Bofors cannon twin mounts, four 40MM single mounts, and twelve 20MM Oerlikon cannon single mounts. Additional armament consisting of 3 inch/50 caliber (76MM) single mount guns and .30 caliber (7.62MM) and .50 caliber (12.7MM) air and water-cooled machine guns were fitted to increase anti-aircraft protection. A Mk 51 optical director or Mk 52 radar-controlled director guided the 40MM and 3 inch guns.

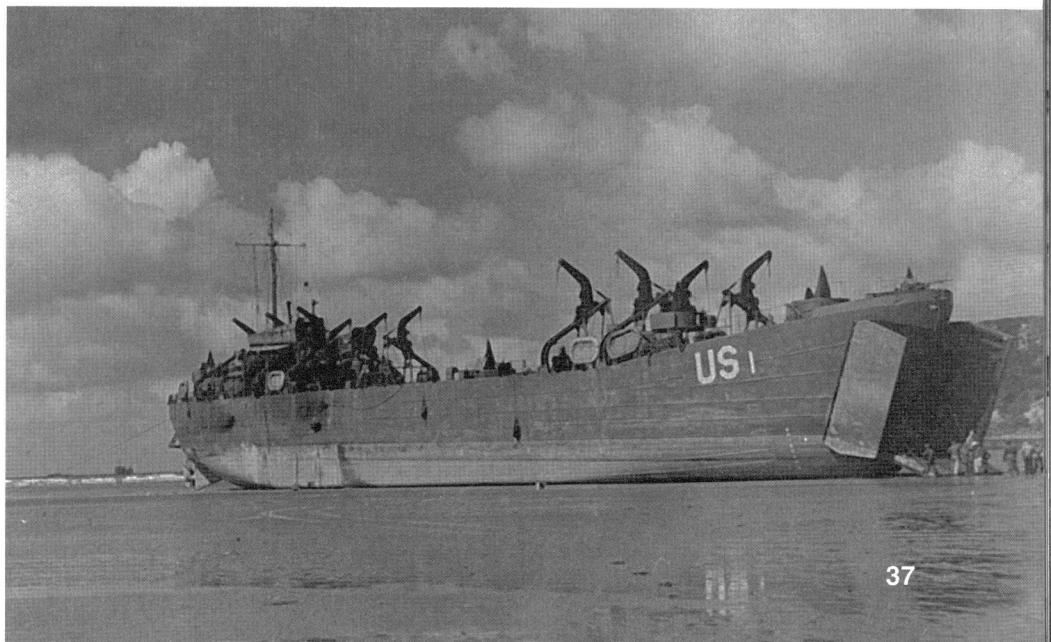
The LST was built in many configurations and designated as such by the number of boat davits fitted. Up to six Welin-type boat davits were fitted to handle the embarked LCVP or LCP (L or R). When two davits were fitted, the LST was designated as a two davit type and so forth. The LST could also carry 'Rhino' bridge causeways on deck and lashed to the side of the hull to facilitate unloading vehicles and cargo when in deeper water. Fitted at the stern was a 'Danforth' style kedge anchor that was deployed in deep water before the LST beached. It was used to winch itself off of the beach back into deeper water.

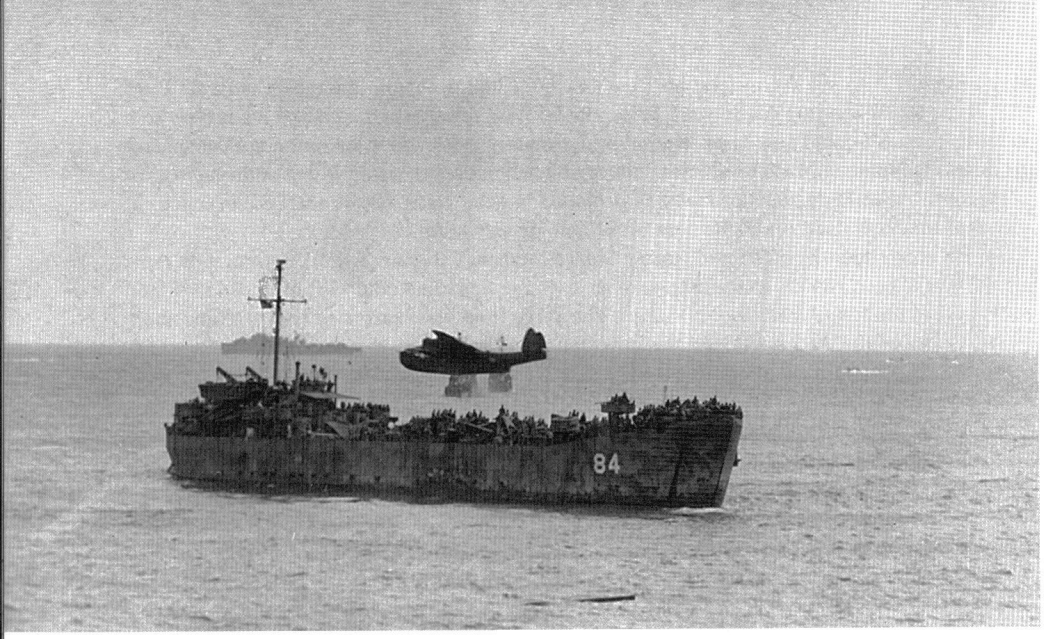
The US converted 47 LSTs into Landing Ship, Emergency Repair (ARL) configuration during the war. These vessels were fitted with an A-frame hoist that could lift 60 tons (54.4 MT) and a pair of ten ton (9.1 MT) boom cranes. The cargo hold was converted into machine shop spaces; most of the ARLs retained the bow doors and ramp to aid in loading supplies and cargo. ARLs were utilized to repair landing craft in the landing areas.

The LSTs were also converted to **PT Boat Tenders (AGPs)**; **Repair Ships, Battle Damage (ARBs)**; **Repair Ships, Aircraft (ARVs)**; and **Salvage Craft, Tenders (ARS-Ts)**. A few LSTs were also fitted with the Brodie Device, a wire strung between two towers that could launch and recover a Piper L-4 Grasshopper liaison aircraft. When the Brodie Device was installed, a catapult was also installed cross deck to launch the L-4. The Brodie Device-fitted LST were first used in the Italian Campaign in 1943. Additionally, a few LSTs were fitted with a fight deck to carry and launch up to six spotter aircraft.

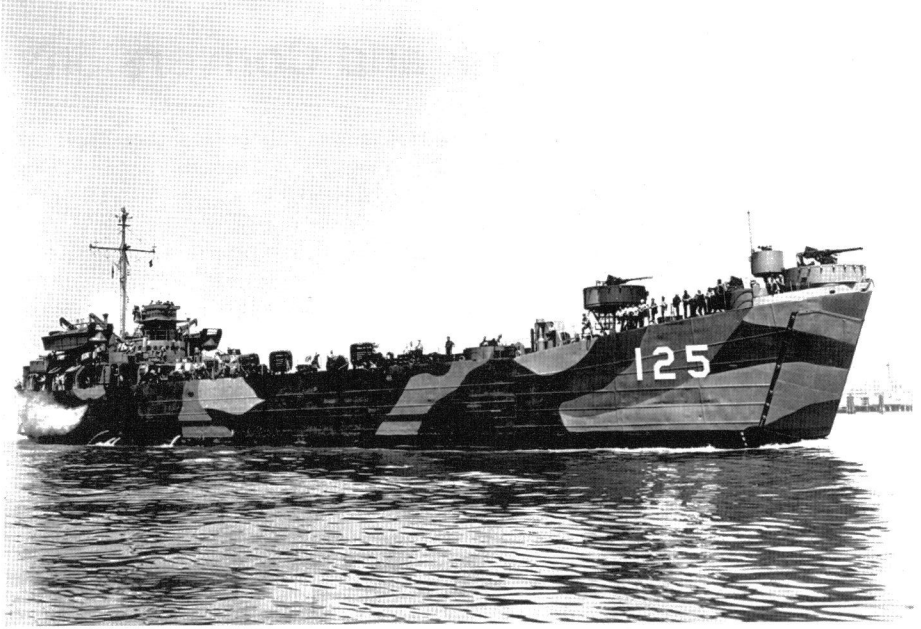
In 1964, the US sold LST-325 to the Greek Navy, who named it SYROS (L-144) for their amphibious forces. When the Greeks declared SYROS surplus, a group called the M/V LST Foundation purchased the LST. A crew of 29 foundation members – all World War Two LST veterans – sailed this vessel from Greece to Mobile, Alabama in December of 2000. LST-325 is now on display at the USS ALABAMA (BB-60) Battleship Memorial Park located on Mobile Bay.

The receding tide at St. Michel en Greves, France on the north shore of Brittany has temporarily stranded Landing Ship, Tank (LST)-1 in September of 1944. She was a six-davit type vessel and carried up to six LCVPs. LST-1 was constructed by Dravo Corporation in Pittsburgh, Pennsylvania and launched on 7 September 1942. She was awarded four Battle Stars for her service in World War Two. (Real War Photos)





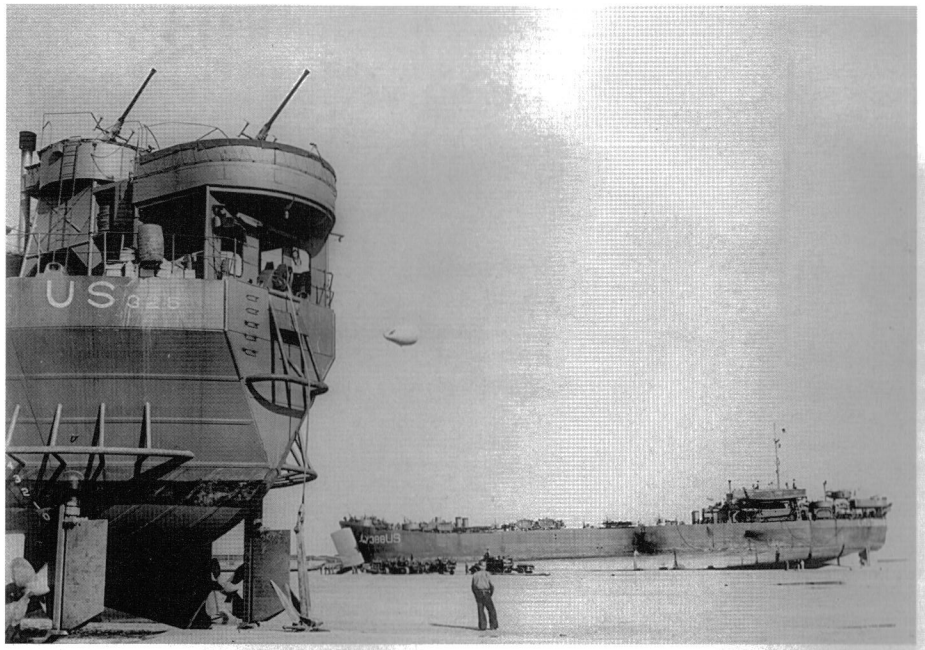
A Martin PBM-1 Mariner flies over LST-84 off Guam in early June of 1944. Her deck is crowded with war materiel for the invasion of the Japanese-held island on 15 June. LST-84 is camouflaged in the Tropical Green Measure authorized for the Pacific Theatre. A Landing Ship Dock (LSD) cruises in the horizon. (Real War Photos)



LST-125 sails out of Mare Island, California on 17 August 1945. This vessel was intended to be part of the fleet assembled to attack the Japanese home islands, had not Japan surrendered three days earlier. She was built by Missouri Bridge and Iron Works in Evansville, Indiana and sailed down the Ohio and Mississippi rivers to join the amphibious fleet. (Real War Photos)

Soldiers prepare to unload equipment from LST-173 on the beach at Anzio, Italy on 22 May 1944. She is camouflaged in Measure 22, the Graded System of Haze Gray (5-H) and Navy Blue (5-N) authorized for the European Theatre. This six-davit type LST has a single LCP (R) and two LCVPs hung from her port davits. (Real War Photos)

An M4 Sherman tank from the 710th Tank Brigade is backed into LST-278 at San Diego on 15 February 1944. This tank was bound for a destination in the Pacific Theatre. The LST is camouflaged in a Haze Green (5-HG; approximately FS34300) scheme designed for Pacific operations. Her bow gun position contains a single barrel 40MM Bofors cannon. (Real War Photos)

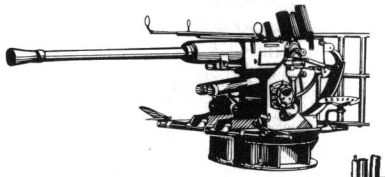


LST-325 (left) and LST-388 unload supplies while stranded at low tide during the Normandy Operation on 12 June 1944. The beached vessels reveal their propellers, rudders, and the 'Danforth' style kedge anchor from the stern. In 1964, LST-325 was sold to the Greek Navy, who renamed it SYROS (L-144). The LST Foundation purchased SYROS and 29 members of the foundation sailed her from Greece to Mobile, Alabama in 2000. She is now on permanent display along with the battleship USS ALABAMA (BB-60). (Floating Drydock)

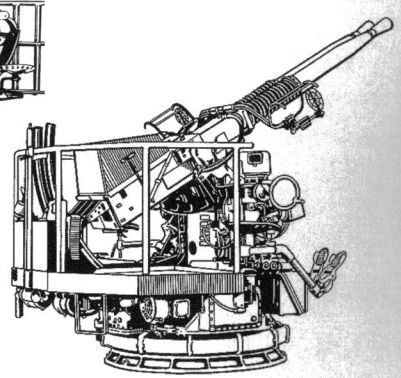
LST-334's wheelhouse and bridge area are covered by a variety of weapons. These include 20MM Oerlikon anti-aircraft guns and .50 caliber (12.7MM) air and water-cooled machine guns. Sandbags are stacked around the positions to add some protection for the gun crews. These weapons complemented heavier anti-aircraft and anti-surface target guns carried by the landing craft. This LST was sailing in operations off of Bougainville on 15 December 1944. (Real War Photos)

Landing Craft Heavy Weapons

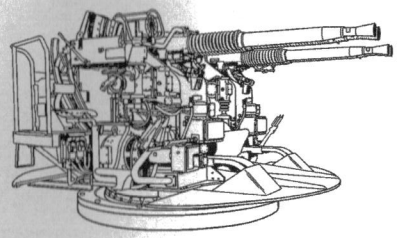
40MM Bofors Single Mount



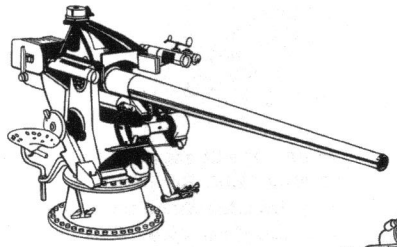
40MM Bofors Twin Mount



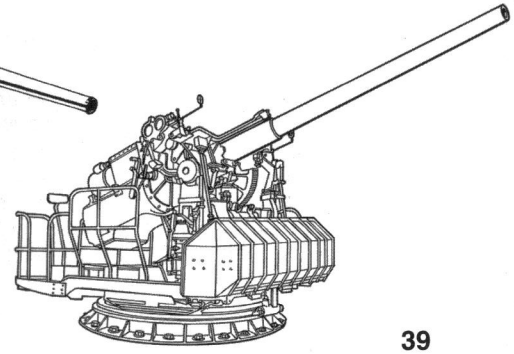
40MM Bofors Quad Mount



3 Inch (7.6 CM)/50 Caliber Single Mount



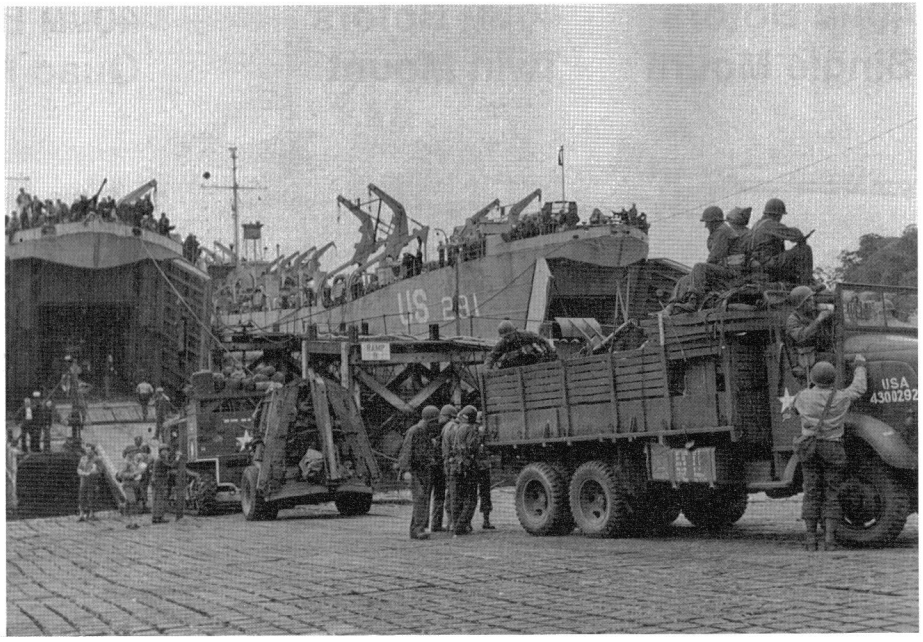
5 Inch (12.7 CM)/38 Caliber Single Open Mount

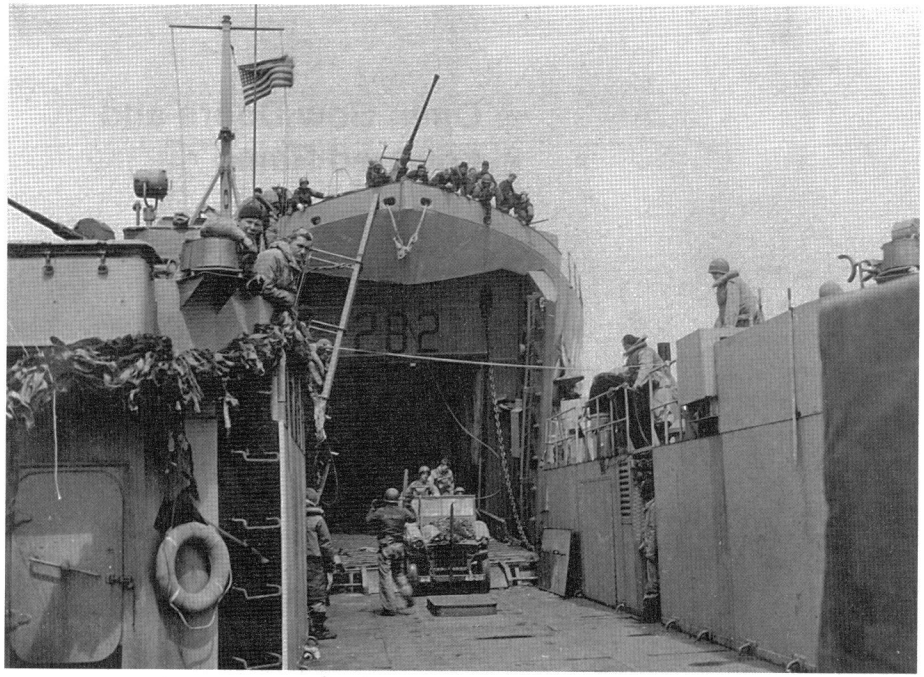


US Army personnel arrange loading of equipment aboard two LSTs – LST-382 (left) and LST-499 – at Brixham, England on 27 May 1944. Brixham was one of many assembly points for the Allied invasion force sent to invade France on 6 June 1944. A disassembled Piper L-4 Grasshopper liaison aircraft is loaded on a 6x6 cargo truck for one of the LSTs. The L-4 was landed at the beach, assembled, and flown to spot gunfire for the invasion fleet. Tracked doziers, a 3/4 ton (680 KG) Dodge personnel carrier, and a ten ton (9.1 MT) wrecker await their turn behind the Grasshopper. LST-499 was sunk off the Normandy beachhead on 8 June 1944. (Real War Photos)

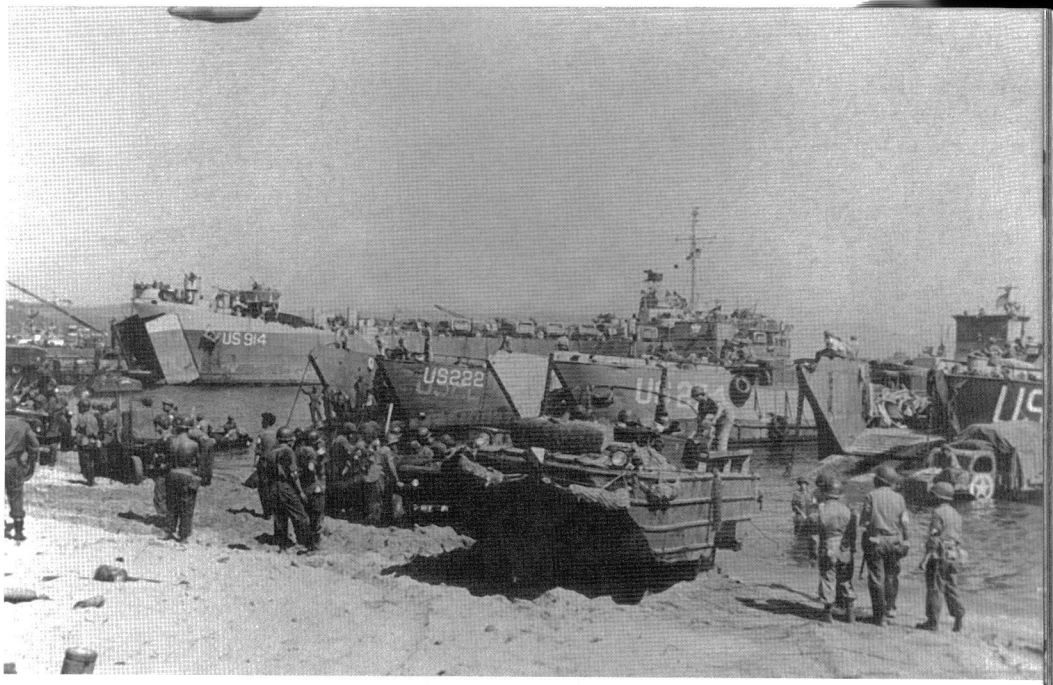
Dodge 6x6 weapon carriers and Jeeps are loaded into LST-51 and LST-496 at an English port in late May of 1944. The vehicles are towing 57MM anti-tank guns for use in the invasion of France on 6 June. Two LSMs are berthed on each side of the loading ramps. LST-51 is camouflaged in Measure 21, the Navy Blue scheme, while LST-496 is painted in Measure 13, the Haze Gray scheme.

A GMC cab over truck awaits its turn to back into LST-496 at the loading assembly site in England in late May of 1944. A tracked weapons carrier towing a 90MM gun is about to approach the bow ramp to take its assigned position in the LST's 258 foot (78.6 M) long cargo hold. LST-291 (to starboard) also loaded equipment and troops for the coming invasion of France. (Real War Photos)



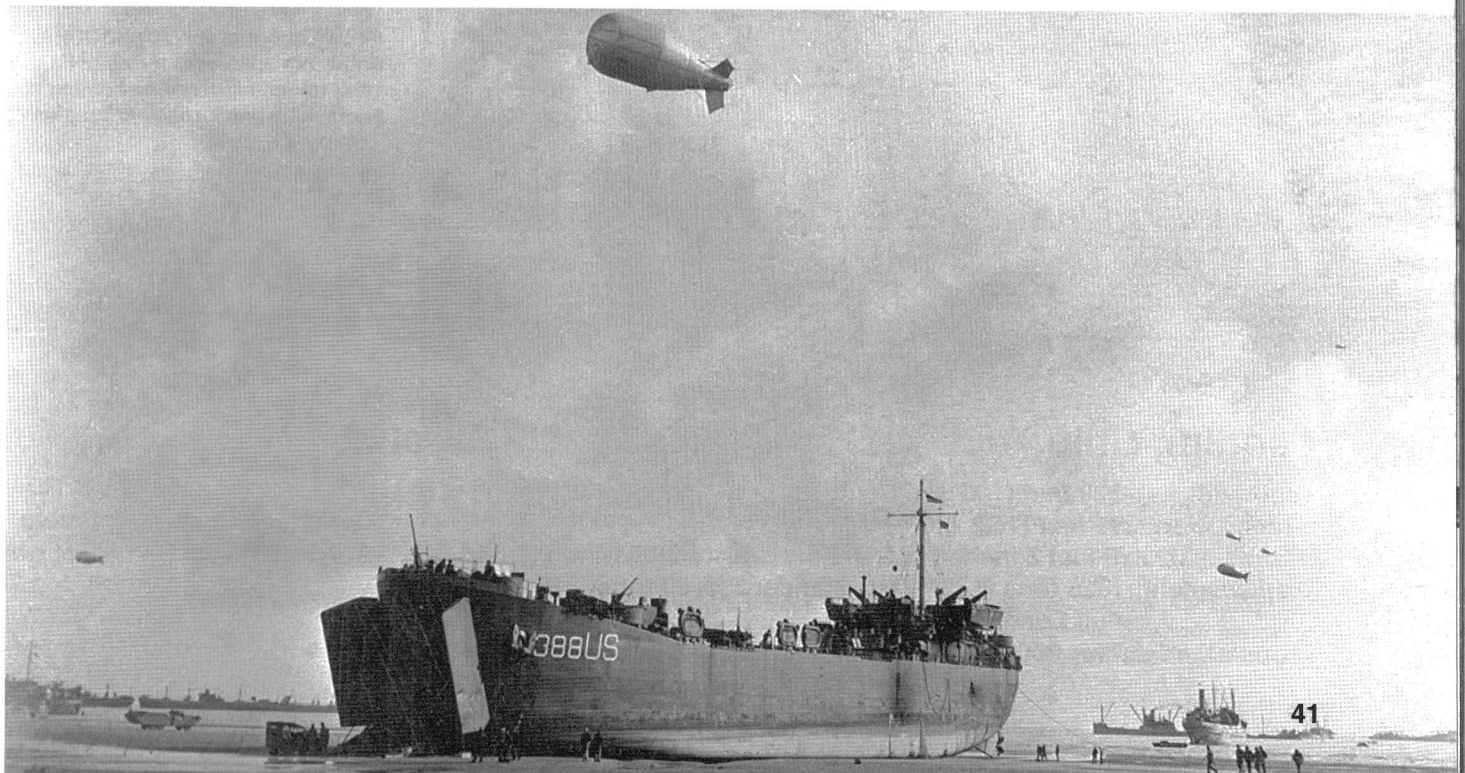


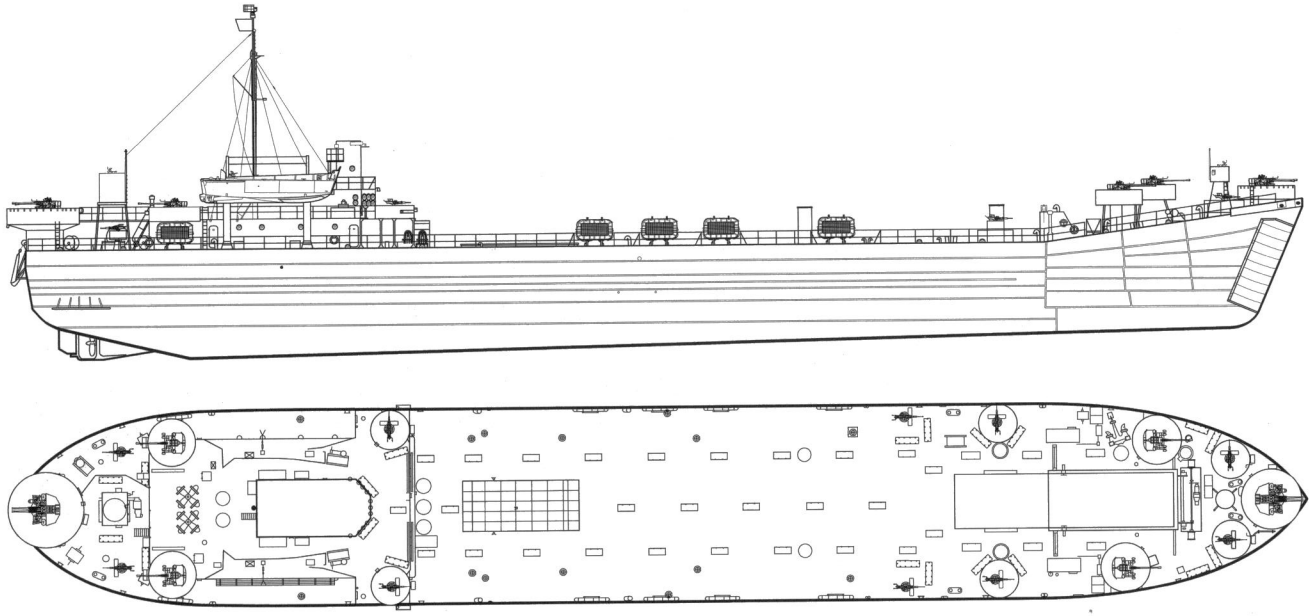
A Landing Craft Tank Mk 6, or LCT (6), is being used as a floating causeway to unload a Jeep 4x4 from LST-282. This occurred during the invasion of southern France (Operation DRAGOON) on 15 August 1944. A German glider bomb sank LST-282 later that day. She is camouflaged in Measure 22, the Graded System. (Real War Photos)



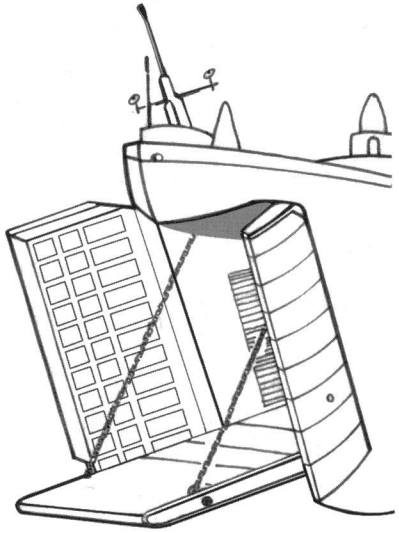
LST-914 is beached with three LCTs (LCT-222, LCT-274, and an identified craft) on a southern French beach in August of 1944. A DUKW amphibian truck was summoned to aid a distressed 6x6 cargo truck that had landed in water slightly deeper than its operating depth. (Real War Photos)

LST-388 is stranded on the beachhead at Normandy, France on 12 June 1944. This was six days after 'D-Day,' when the Allied assault on Germany's 'Fortress Europe' began. Allied planners needed an ideal combination of tides, weather conditions, and moonlight for overnight airborne operations to successfully pull off Operation OVERLORD. She began her combat career in the invasion of Sicily (Operation HUSKY) on 10 July 1943. This operation marked the first use of both the LST and the smaller Landing Craft, Infantry (LCI). LST-388 was awarded four Battle Stars for her service in World War Two. A barrage balloon is deployed above the LST. This balloon is secured to the surface by steel cables, which are capable of damaging aircraft that flew into them. Both the Allies and Axis used barrage balloons to discourage low-flying aircraft during World War Two. (Real War Photos)

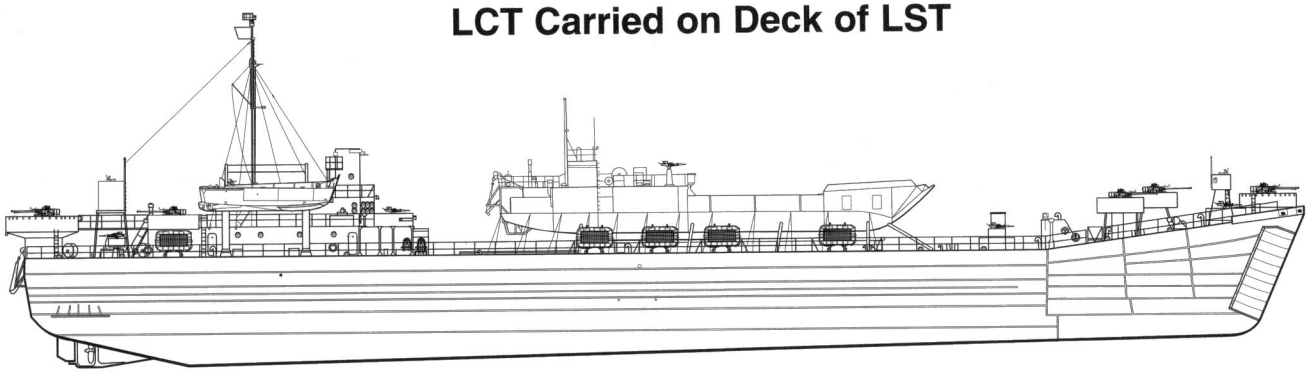




Open Bow Doors and Lowered Ramp

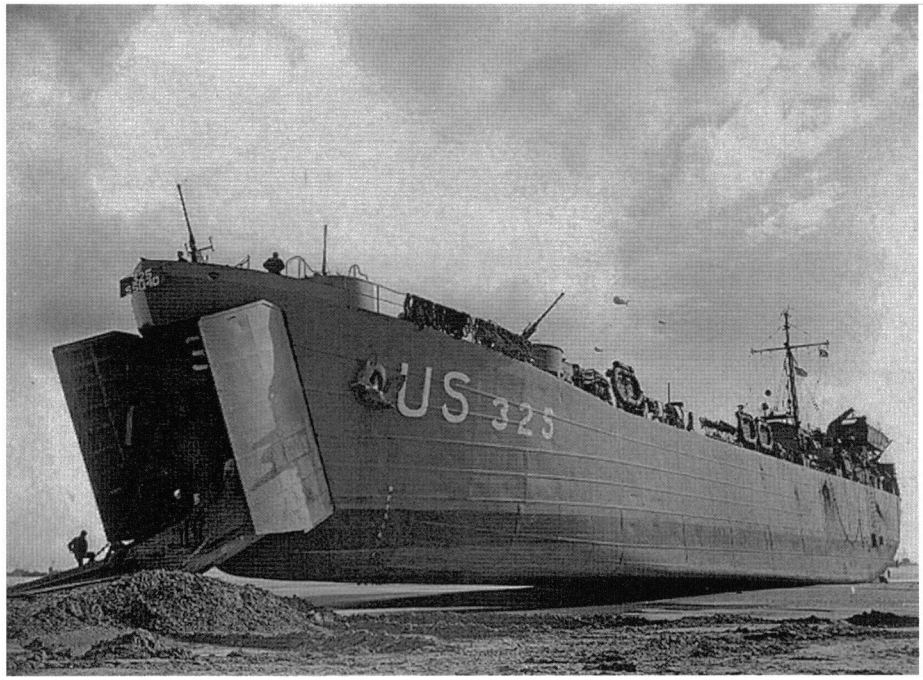


LCT Carried on Deck of LST



Landing Ship, Tank (LST) Mark 2 Specifications

Length:.....328 feet (100 M)
Beam:.....50 feet (15.2 M)
Draft:.....8 feet 2 inches (2.5 M) Forward, 14 feet 1 inch (4.3 M) Aft
Displacement:.1625 tons (1474.2 MT) Standard, 4080 tons (3701.4 MT) Full Load
Propulsion:.....Two 900 HP General Motors diesel engines/Two Shafts
Speed:.....12 knots (13.8 MPH/22.2 KMH)
Complement:...Nine officers, 104 men
Armament:.....Two 40MM twin mount cannon, four 40MM single mount cannon, ten 20MM single mount cannon, and six .50 caliber (12.7MM) machine guns



The bow doors are opened on LST-325, which is stranded by low tide on the Normandy beach, France on 12 June 1944. This was during a resupply mission to support US forces in the Normandy beachhead. Three single barrel 40MM Bofors anti-aircraft guns are elevated on their bow stations. The waterline boot topping is black, while the rest of the lower hull is a dark red (approximately FS30166). (USN)

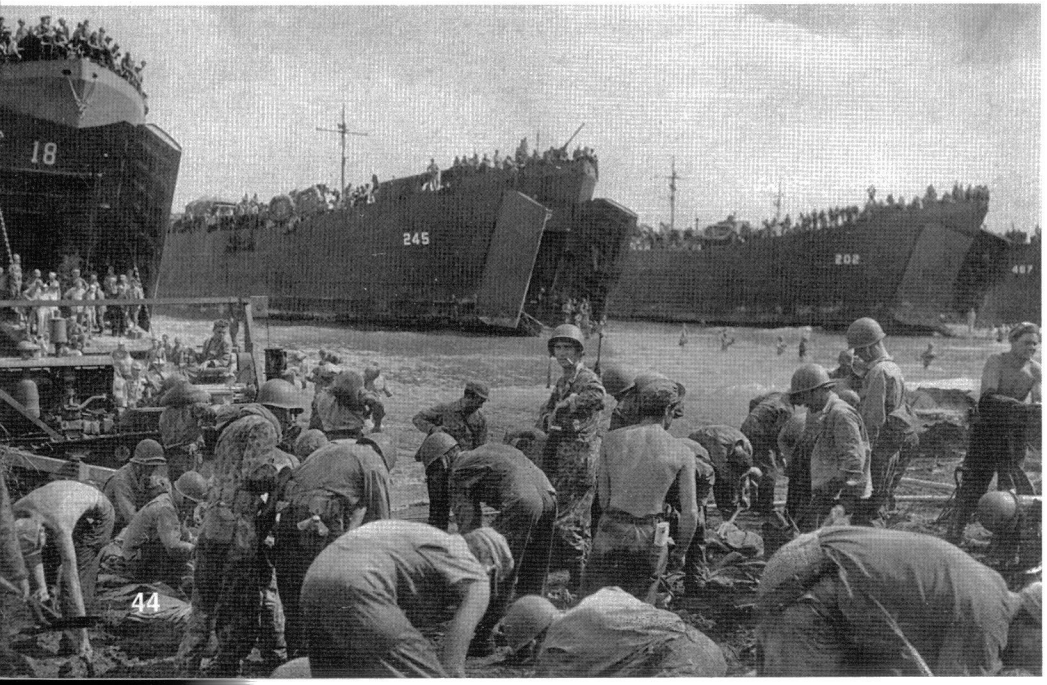
LST-221 closes up alongside the aircraft carrier USS HANCOCK (CV-19) in rough Pacific seas on 11 September 1944. This landing craft was operating as a stores ship, delivering bombs for the carrier's aircraft. The LST's number was painted on the hull side for easy identification. Vertical cylinders on her deck were air vents for the cargo/tank deck. (Real War Photos)

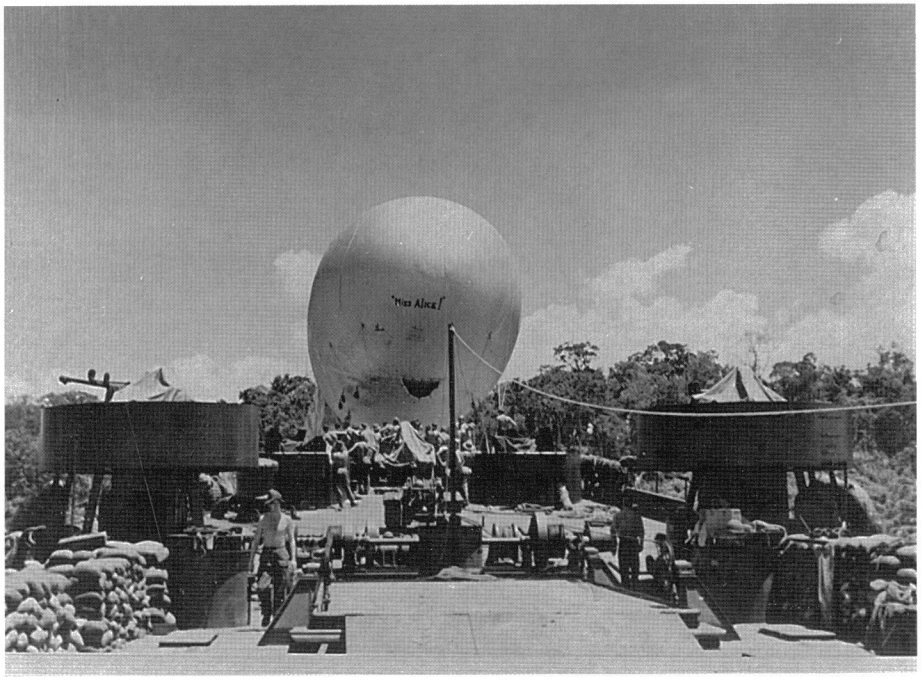
US Army 6x6 cargo trucks roll from LST-68 on a sand causeway in August of 1944. This USCG-manned ship participated in the US invasion of Cape Sansapor in Dutch New Guinea on 30 July. Two soldiers wade in the bay while supervising the unloading. LST-68's pennant number is painted on the inner bow for identification by shore personnel. She earned seven Battle Stars for her World War Two service. (Real War Photos)

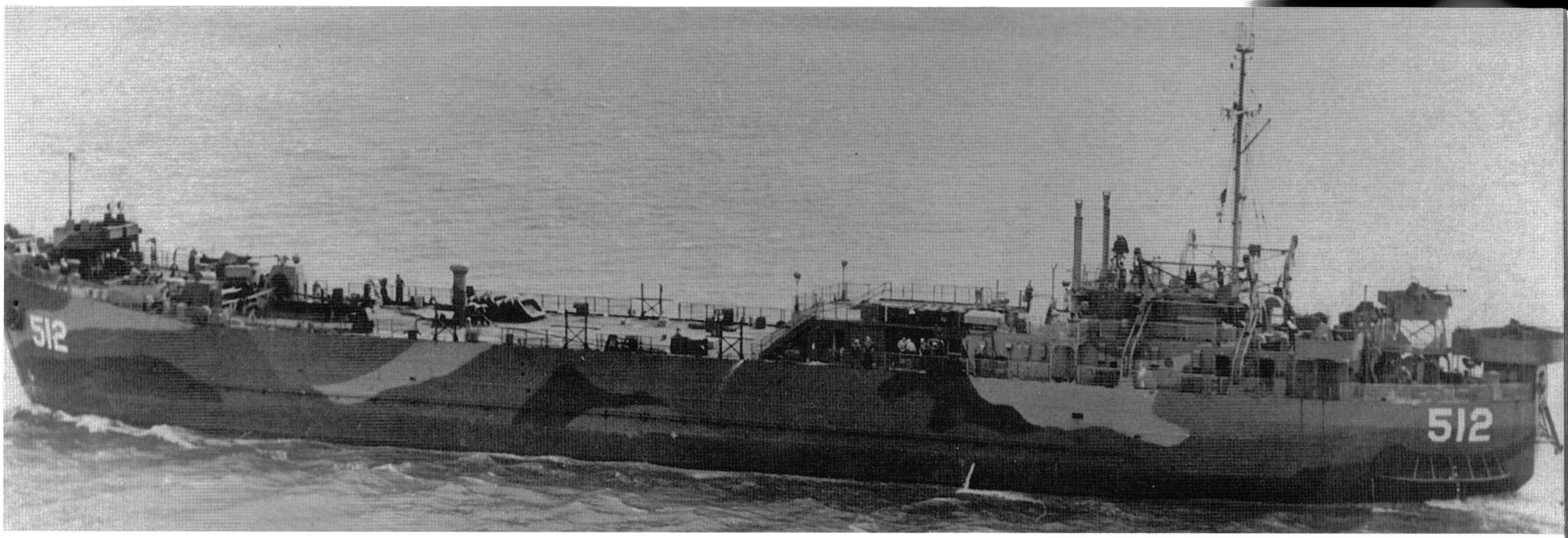
LST-20 (near) and LST-411 are nosed up against the volcanic sand beach at Kiska, Alaska on 23 August 1943. They delivered much needed supplies for the US invasion and occupation. These USCG-manned LSTs are camouflaged in Measure 13, the Haze Gray System. This camouflage was effective in the foggy conditions common in the Aleutian Islands. An LCM is beached between the two LSTs. (Real War Photos)

US Marines fill sandbags to construct gun emplacements at Leyte, the Philippines while (from left) LST-18, LST-245, LST-202, and LST-467 unload their cargo in 1945. All four LSTs are camouflaged in the Tropical Green scheme specifically designed for the Pacific Island operations. These ships allowed supplies to be sent directly to the shore without requiring cargo handling equipment found in most ports. (USN)

Sailors aboard LST-447 prepare to deploy a barrage balloon named "Miss Alice!" This was used to help protect the ship from low-level Japanese air attacks. A deck elevator is located between the foredeck 40MM gun tubs. Sandbag gun positions for additional defensive armament are placed immediately aft of the gun tubs. (Real War Photos)

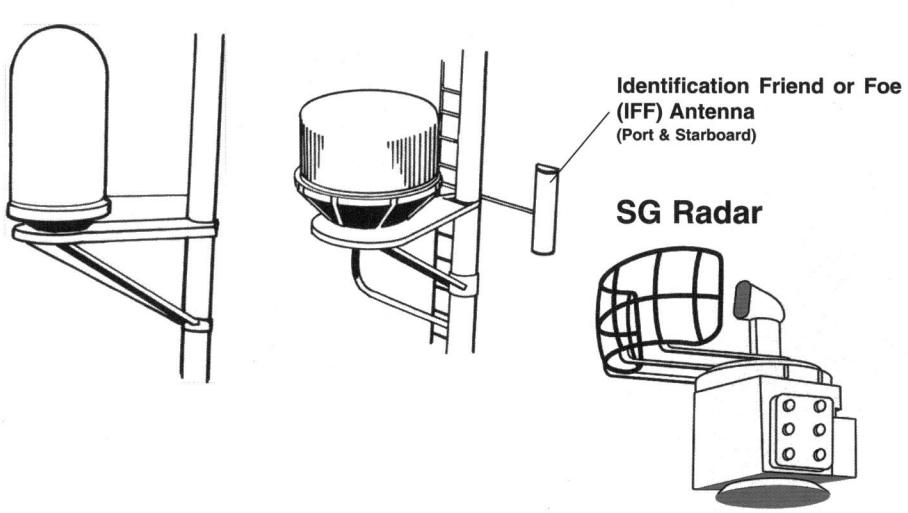




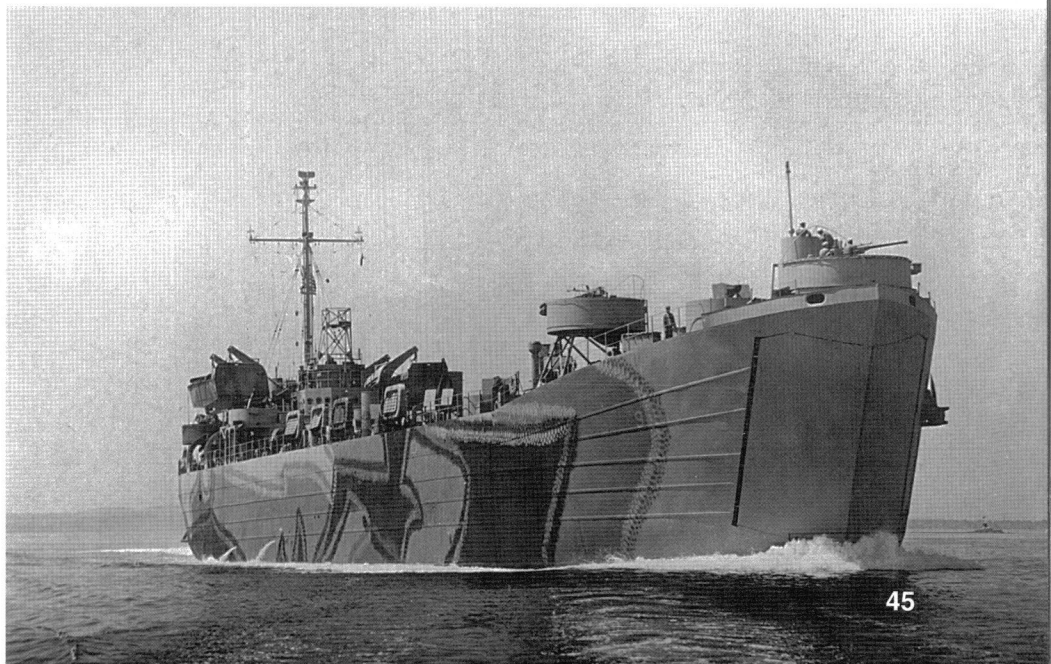


The 491 Class, two davit type LST-512 is camouflaged in a Tropical Measure for the Pacific. Upper decks in this measure were Deck Green (20-G; approximately FS34094). A deck was constructed just forward of the bridge area over the aft cargo hatch. Her signal mast is fitted with a Radio Direction Finder (RDF) antenna and a whip radio antenna at its peak. The RDF tracked the location of radio signals to determine where enemy forces were located. (Real War Photos)

Radar Antennas (for LSTs, LSMs, and LCIs)



LST-909 sails out of Boston Harbor, Massachusetts for the Pacific on 12 May 1944. She is freshly painted in the tropical camouflage scheme Measure 31/17L (modified). This scheme used Dull Black (BK), Navy Green (5-NG), Deck Green (20-G), and Ocean Green (5-OG). A single barrel 40MM cannon is mounted in the bow tub, which is fitted with guards to prevent the crew from accidentally firing into their own ship. (Real War Photos)



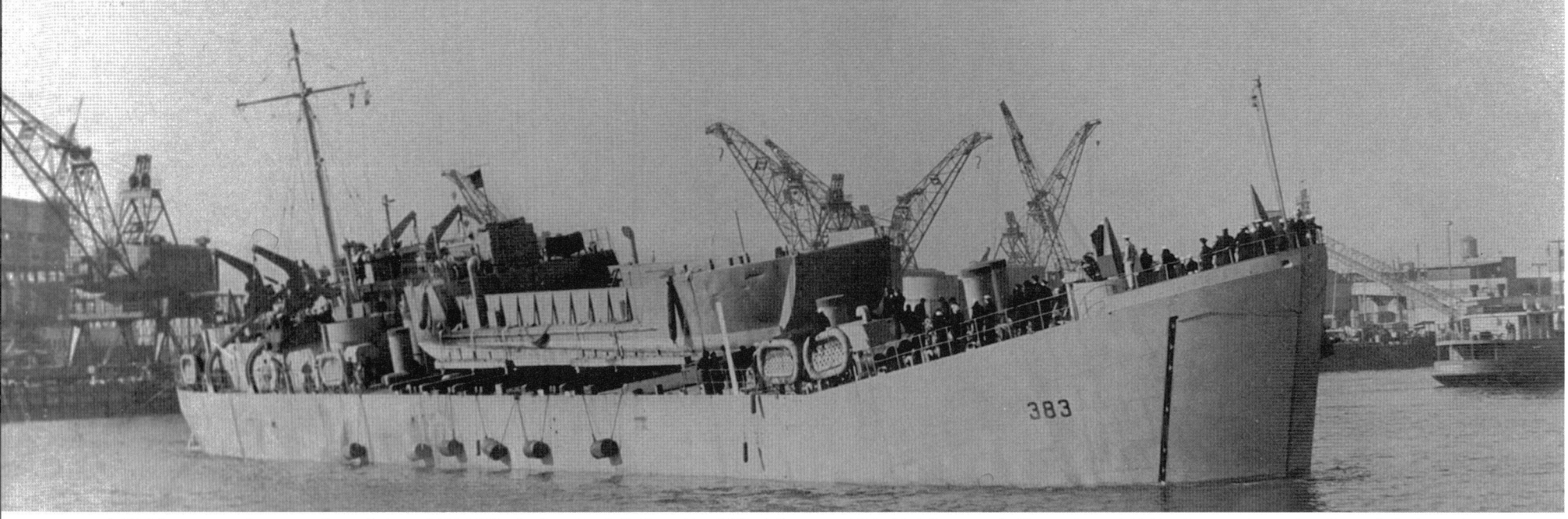
A wrecked LSM (3) is stranded beside LST-764 on Red Beach, Iwo Jima in February of 1945. LST-390 – painted in Measure 31/17L – is beached to starboard of LST-764. Larger white hull numbers were painted aft of the smaller numbers already on these vessels. A USMC LVT (4) (11843) is parked in front of LST-390, while Pierced Steel Planking (PSP) and a 6x6 cargo truck are placed near the other LST. (Real War Photos)

An Australian Matilda tank (35241) departs through LST-590's bow doors at Tarakan Island, Borneo on 1 May 1945. Several Australian infantrymen stand on the lowered bow ramp aft of the tank. LST-590 was a veteran of the invasion of southern France in August of 1944 and earned two Battle Stars for her service in both the Atlantic and Pacific War Zones. (Real War Photos)

FMC LVT-2 Buffaloes from the 31st Marine Division are guided back into LST-452 at Aitape, New Guinea on 6 September 1944. The LVT-2 was an amphibious tractor ('amtrac') extensively used by the USMC and US Army during World War Two. This vehicle was 26 feet 2 inches (8 M) long, 10 feet 8 inches (3.3 M) wide, and 8 feet 8.5 inches (2.7 M) high. The LVT-2 was armed with one .30 caliber machine gun and one .50 caliber machine gun. It had a three man crew and could carry 24 troops or 6500 pounds (2948.4 KG) of cargo. Each LST carried 18 LVT-2s in two rows of nine Buffaloes per row. A GMC DUKW is parked on the beach between LST-452 and LST-468. This amphibious truck was nicknamed the 'Duck' and widely served with US and Allied forces throughout the conflict. The DUKW was 31 feet (9.4 M) long, 8 feet 2.4 inches (2.5 M) wide, and 8 feet 9.5 inches (2.7 M) high. It was crewed by two men and could carry 25 troops or 5350 pounds (2426.8 KG) of equipment. Each LST carried up to 21 DUKWs in three rows of seven 'Ducks' per row. The beach master directs traffic through a loudspeaker mounted on a 6x6 cargo truck. (Real War Photos)

The Brodie Device was fitted to LST-776 to test its ability to operate at sea. This device required the pilot to climb out on the bow-mounted gantry and be lowered to his aircraft. Once he had done so, the aircraft flew off the cable strung between the two gantry towers. An angled catapult was installed on her deck for launching Piper L-4 Grasshopper liaison aircraft. The LST is camouflaged in Tropical Measure 31/18L for Pacific Operations. (Real War Photos)

LST-337 passes another landing craft during the Allied invasion of Salerno, Italy on 9 September 1943. An officer and a sailor sit aft of two single mounted 20MM Oerlikon cannon. LST-337 prepares to commence flight operations using the flight deck fitted to the landing ship. She launched L-4 Grasshoppers to help spot naval gunfire supporting the invasion Once launched, the aircraft had to land ashore, since they had no way to recover aboard the LST's flight deck. (Real War Photos)



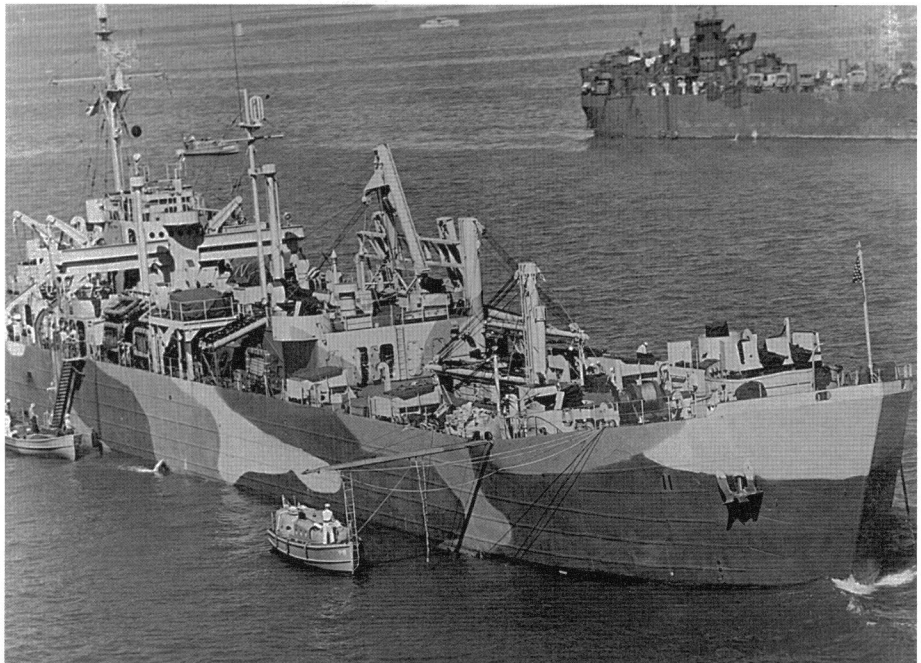
LCT-31 prepares for a test launch from LST-383's deck at Norfolk Navy Yard, Virginia on 3 January 1943. The Mk 5 landing craft was moved sideways off the landing ship into the water. The LST is camouflaged in Measure 13, the Haze Gray (5-H, approximately FS35237) System. In November of 1944, she was loaned to Great Britain under the 'Lend Lease' agreement and renamed HMS LST-383. (Real War Photos)

LST-812 is secured to LST-388's main deck as she sails in the Pacific in 1945. One 40MM cannon is installed in the port forward gun tub; however, no weapons are mounted in the other forward tubs. Both the LST and the LCT (6) are painted in a tropical camouflage scheme. A movie screen is set up on the LCT's well deck. (Real War Photos)

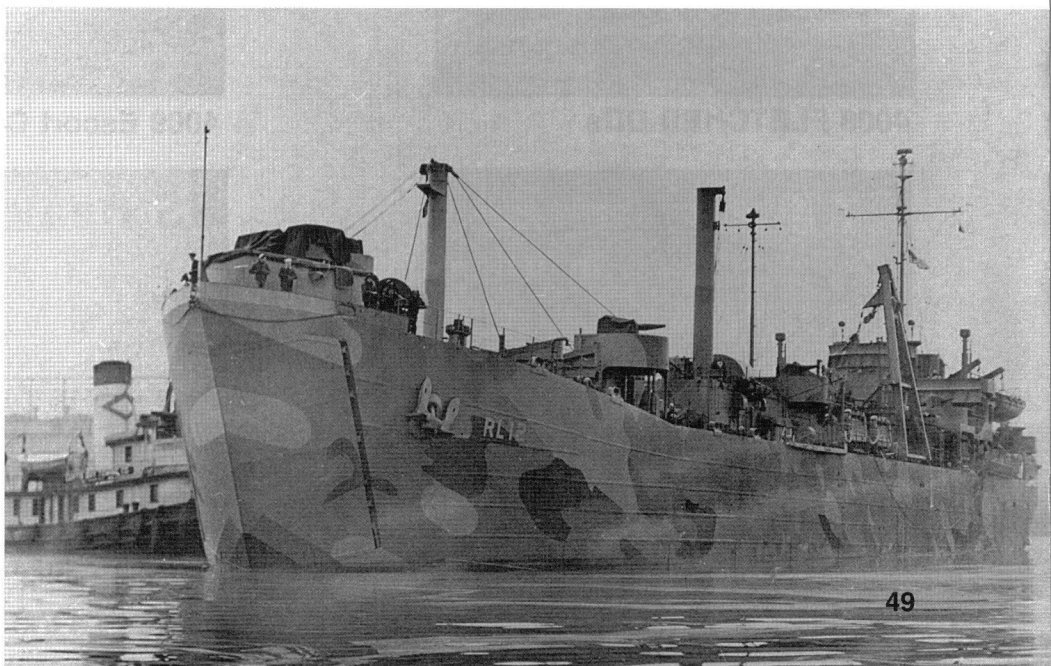
LST-981 sails off to England with LCT-657 secured to her deck on 9 April 1944. These vessels were joining the Allied invasion fleet for the assault on Normandy two months later. A German mine damaged this 511 class LST off the Normandy beachhead on 6 June, forcing her withdrawal to England for repairs. The LST is camouflaged in Measure 22 (the Graded System), while the LCT (6) is painted Haze Gray. (Real War Photos)

LST-834 participated in the invasion of Okinawa (Operation ICEBERG) on 1 April 1945. She is carrying LCT-1415, which is loaded with invasion vehicles. Four rectangular life rafts are stowed on the LST's deck beside the LCT. An SG surface search radar antenna is mounted atop LST-834's signal mast. Cruising in the distance is LST-759, which has a floating pontoon 'Rhino' bridge causeway fitted to her port side. The 'Rhino' was floated to the beach when an LST was too deeply loaded for normal beach landings and had to berth in deeper water. This causeway was secured to shore and the LST then docked at the 'Rhino.' (Real War Photos)

LST-604 was converted to a Patrol Torpedo (PT) Boat Tender and renamed USS SILENUS (AGP-11). In 1944, she was assigned to the Pacific War Zone to service PT Boat Squadrons 32 and 37. A large 'A' frame crane fitted to her port side enabled SILENUS to lift PT boats out of the water for servicing. (Real War Photos)



The USS POSEIDON (ARL-12) – named for the Greek god of the Sea – was the former LST-1037 converted to a Landing Craft Repair Ship. She was converted at Boston Navy Yard, Massachusetts before her assignment to Service Squadron Ten (ServRon 10) in the Pacific. She is fitted with a large 'A' frame crane on her port side. (Real War Photos)



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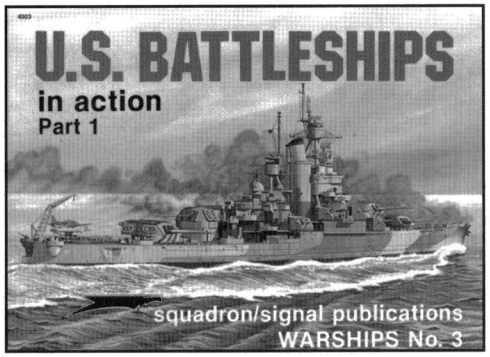

4003 US Battleships, Part 1

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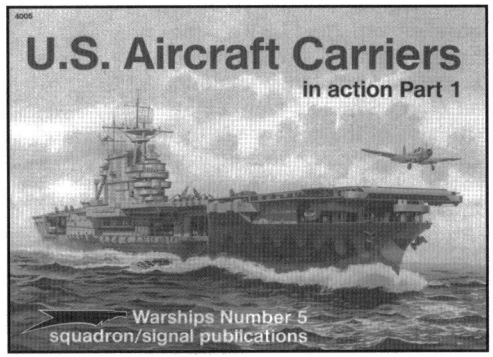
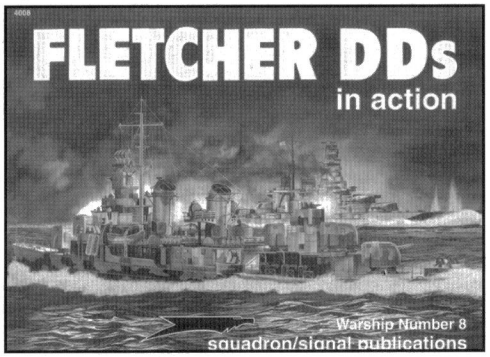


4005 US Aircraft Carriers, Pt 1



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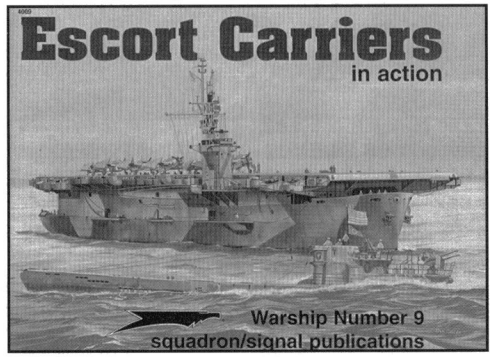

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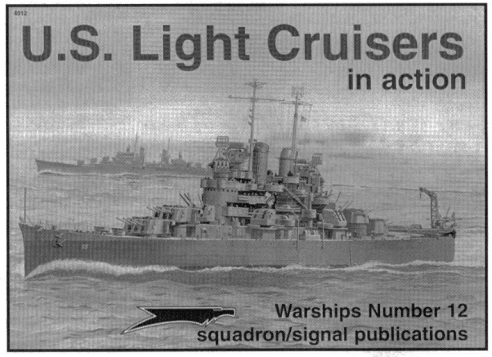

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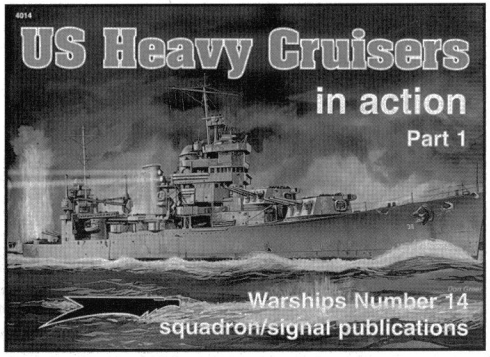
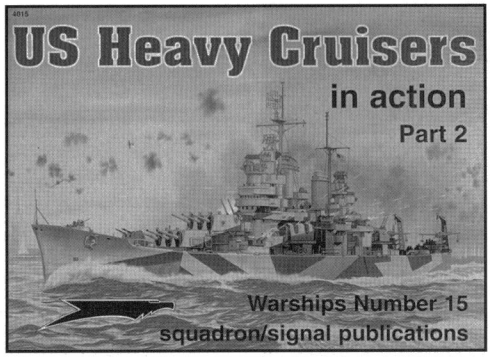
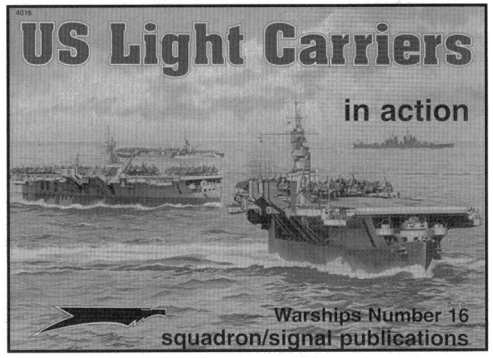


4014 US Heavy Cruisers, Pt 1



4015 US Heavy Cruisers, Pt 2



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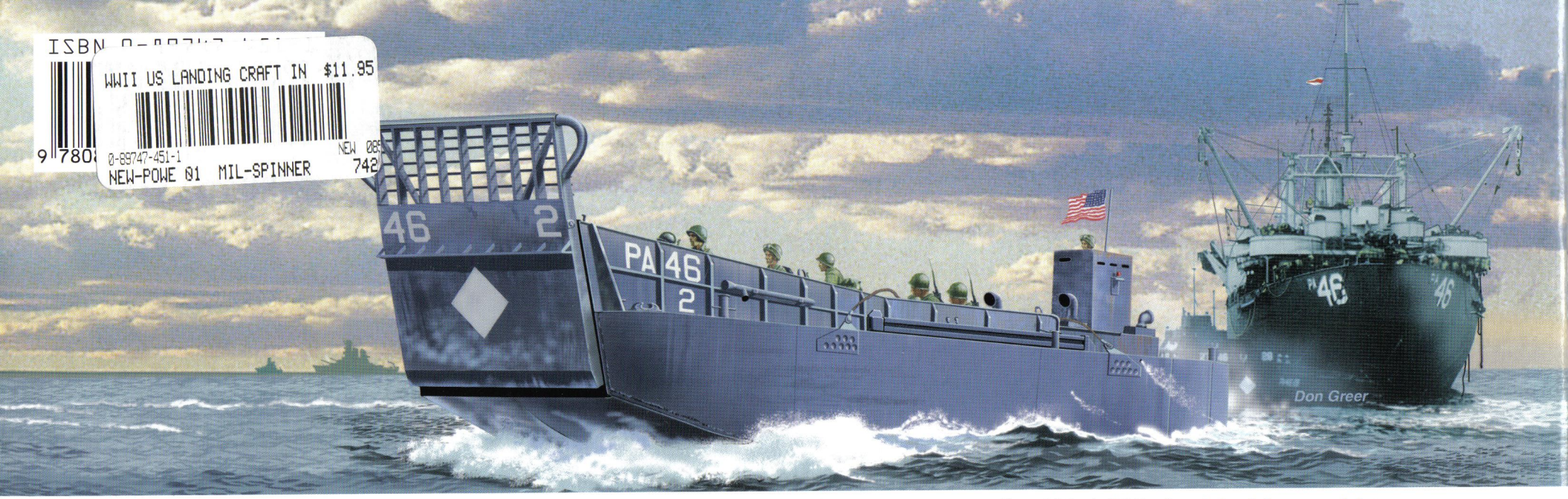

(Above) An LCM (3) (PA46-2) approaches the beach at Iwo Jima on the morning of 19 February 1945. This vessel is painted in Measure 21, the Navy Blue Scheme, and is assigned to the attack transport USS KNOX (APA-46).

(Below) LSM (R)-196 launches a volley of 5 inch (12.7 CM) rockets at Japanese defenses on Tokishniki Shima, near Okinawa, in March of 1945. The ship is painted in Measure 31/17L, a Tropical Scheme consisting of Dull Black, Navy Green, and Ocean Green.